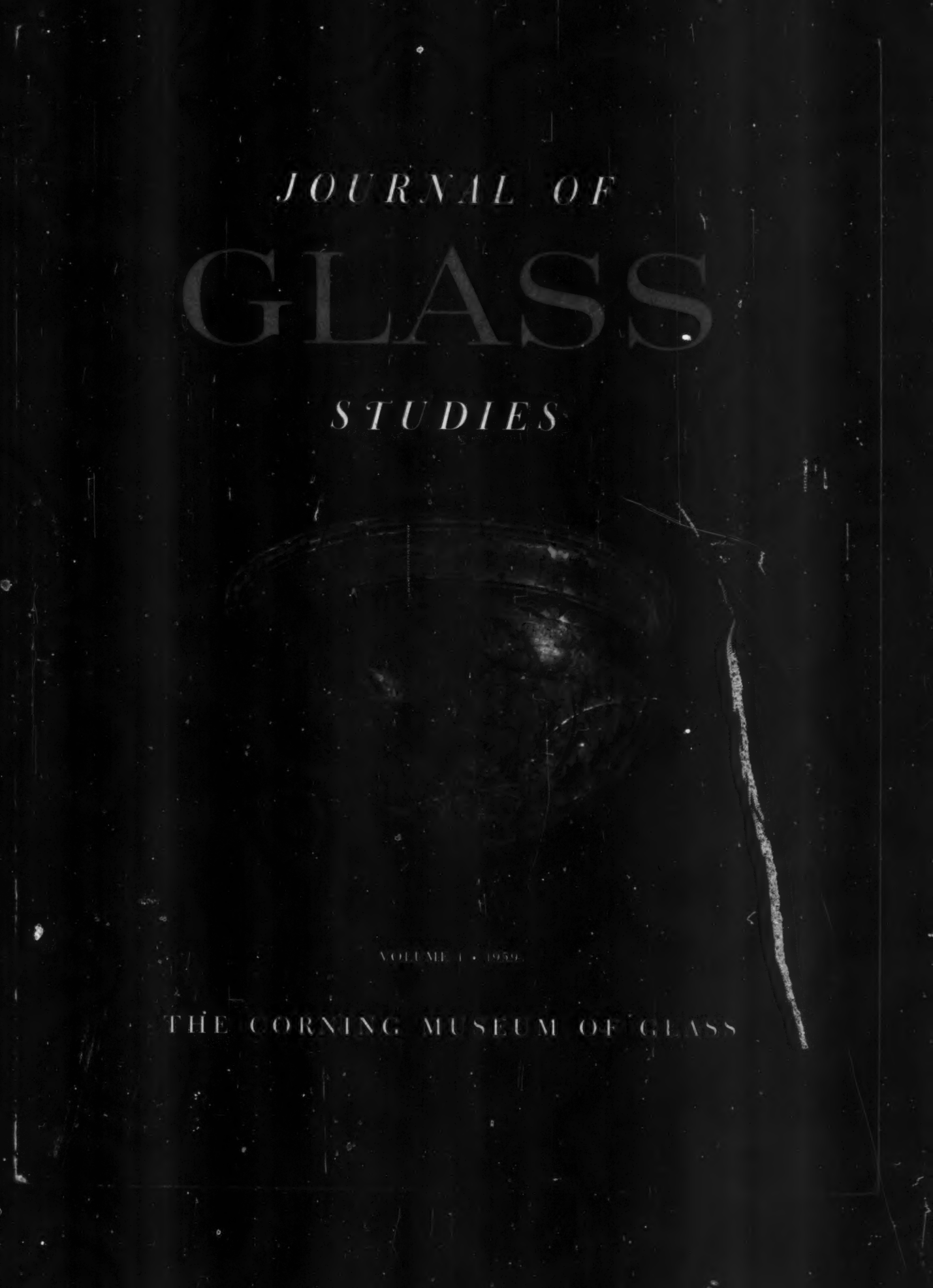
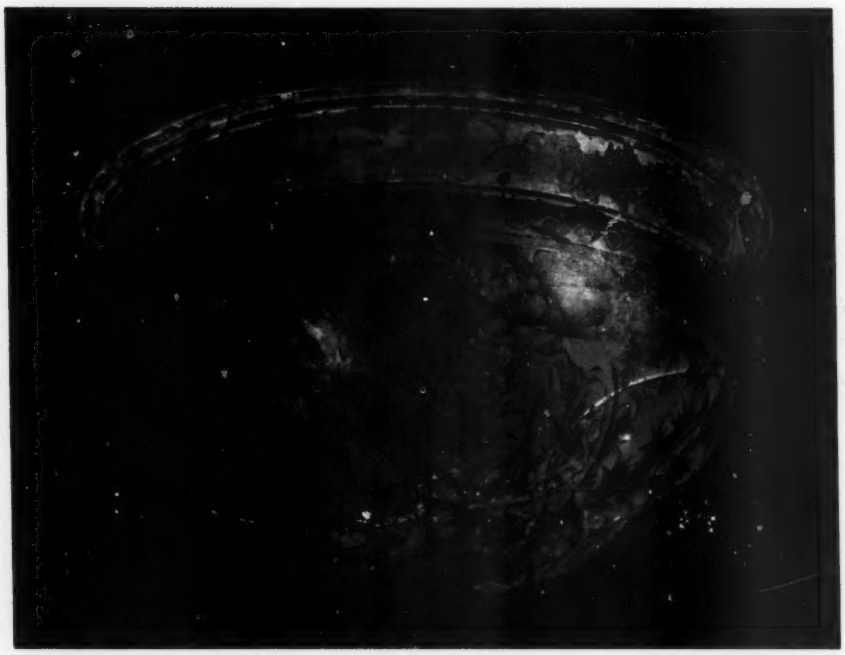
JOURNAL OF GLASS STUDIES



VOLUME I • 1959

THE CORNING MUSEUM OF GLASS

JOURNAL OF GLASS STUDIES



A regular feature of the *Journal* will be the inclusion in every issue of a color plate of a glass masterpiece from a public or private collection in the United States or abroad.

The bowl illustrated on the cover and above is now in the British Museum, London. It was found at Canosa in Apulia and was probably made in Alexandria in the 3rd century B.C. It is discussed on page 46.

JOURNAL OF GLASS STUDIES

VOLUME I · 1959

THE CORNING MUSEUM OF GLASS
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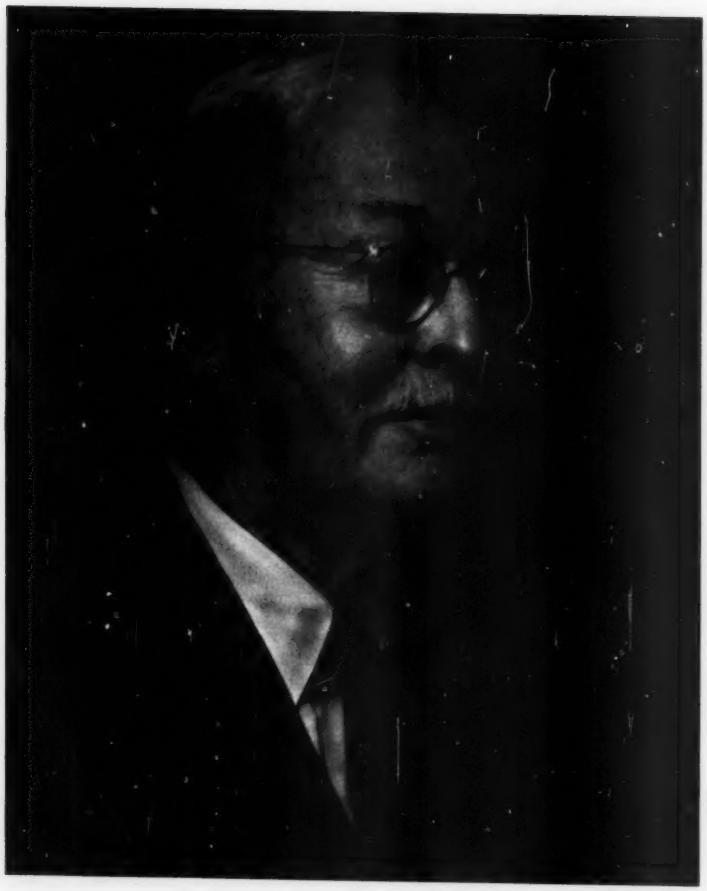
THE JOURNAL OF GLASS STUDIES

has been conceived to meet the need for recording those discoveries, interpretations, acquisitions and publications which affect the art and history of glassmaking. It is hoped that articles will include scholarly contributions of a scientific-technical nature as well as archaeological and art historical accounts. Profiles of individual collections, and techniques of installation and preservation are areas in which the editors would welcome papers. The recent acquisition section may include 'first' publication in extenso accounts as well as brief illustrated notices. The area devoted to listing recent books, pamphlets and articles should be expanded to include book reviews. Although the final content of each issue is the responsibility of the editors, it is largely determined by the number, nature and quality of contributions received; no articles are commissioned and unsolicited manuscripts are welcomed. In exchange every effort is made to meet the requirements of the author as to space, number of illustrations and arrangement. The success and ultimate value of the *Journal of Glass Studies* is dependent on its contributors.



On Tuesday, December 16, 1958, George S. McKearin died and to him this first issue is dedicated. No one individual could better typify the *Journal's* variety of interest; no one individual could better personify its purpose. As co-author with his daughter, Helen McKearin, of *American Glass* and *Two Hundred Years of American Blown Glass,* he was responsible for the two most valuable reference books in the American field. He formed great collections and made other collections greater; he discovered and exposed innumerable misconceptions about American glass; and he inspired all who knew him by sharing with them his knowledge and his enthusiasm. Not least among his many accomplishments was the objective balance he maintained between his love for the artifacts of the New World and his appreciation of those of the Old.

JOURNAL OF GLASS STUDIES

VOLUME 1 · 1959

GLADYS D. WEINBERG
Glass Manufacture in Ancient Crete: a Preliminary Study 11

AXEL VON SALDERN
Glass Finds at Gordion 23

GEORGE M. A. HANFMANN
A Preliminary Note on the Glass Found at Sardis in 1958 51

HENRI SEYRIG
Sur Certains Moules Trouvés à Milet 55

A. H. S. MEGAW
A Twelfth Century Scent-Bottle from Cyprus 59

R. J. CHARLESTON
Souvenirs of the Grand Tour. Lattimo Plates with Views of Venice in Iron-Red 63

H. E. VAN GELDER
A Remarkable Goblet for a Remarkable Woman 83

KAZUO YAMASAKI
Introductory Notes on the Ancient Glass of Japan 87

FLORENCE M. MONTGOMERY
An Amelung Sugar Bowl 89

JAMES H. ROSE
18th Century Enameled Beakers with English Inscriptions 95

JEROME STRAUSS
A Pair of 19th Century American Tankards with Japanese Coins 103

Recent Acquisitions 107

Checklist of Recently Published Articles and Books on Glass 116

Biographical Sketches of Contributors 133

FIG. 1. *Louvre, MNB 878*

GLASS MANUFACTURE IN ANCIENT CRETE

A Preliminary Study

GLADYS DAVIDSON WEINBERG

IT seems clear that in ancient Greece the art of glassmaking did not rise to the heights it achieved elsewhere, and as a consequence no ancient writer thought the glass of that country worth mentioning,[1] but there is no reason to assume that glass was not manufactured in Greece at all.[2] The evidence for glass manufacture is not at once apparent, for no factory of Greek or Roman times has yet been discovered anywhere on the Greek mainland or islands. A few epitaphs of Greek glass workers are known,[3] but epitaphs alone are insufficient evidence since such craftsmen traveled extensively.

Better information can be obtained from the glass itself. Study of the material[4] has led me to the conclusion that there existed in Greece a number of glassmaking centers, generally producing rather inferior wares—not good enough to export but adequate for the domestic market. It would not be wise, of course, to claim that all the poorest wares are of local origin, though possibly this is true. Rather, I base the assumption of the existence of Greek glass factories upon distinctive types of vessels and upon the kind of material from which they are made. I believe that at different times glass factories were functioning at various places in

1. "Although the Greeks were familiar with glass and prized it from very early times, there is no reference in classical literature to the manufacture of glass in Greece." Mary L. Trowbridge, *Philological Studies in Ancient Glass*, University of Illinois Studies in Language and Literature XIII, 3-4, 1928, p. 133.

2. That glass could be manufactured in Greece is shown by the mediaeval establishments at Corinth: Gladys R. Davidson, "A Mediaeval Glass-Factory at Corinth," *American Journal of Archaeology*, XLIV, 1940, pp. 297-324; *Idem, Corinth*, XII, p. 83 ff.

3. See, e.g., Trowbridge, *op. cit.*, pp. 114-115; W. Froehner, *La Verrerie Antique, Collection Charvet*, Le Pecq, 1879, p. 120.

4. The preliminary research for this paper was accomplished in Greece (1954-55) with the aid of the Founders Fellowship of the American Association of University Women. Supplementary study was undertaken in the summer of 1957 with the assistance of a fellowship from The Corning Museum of Glass.

I am greatly indebted to Dr. and Mrs. Christos Karouzos for affording me the facilities of the National Museum, Athens, and for permitting the publication of certain glass vessels; likewise to Dr. Nicholas Platon for similar facilities at the Herakleion Museum, Crete, and for permission to publish material in Cretan museums. For photographs, information and permission to published, I wish to thank Mr. Donald B. Harden, Miss V. Verhoogen, M. Pierre Devambez, Dr. Niels Breitenstein, Miss Jean Davison and especially Miss Hazel Palmer. To Mr. Thomas S. Buechner, Director of The Corning Museum of Glass, and his staff, I am most grateful for many valuable suggestions. Dr. H. L. Thomas very kindly prepared the drawings for Figs. 20 and 21.

Greece, but in this article only one of them – in southwestern Crete – will be discussed.

The clue to the location of this manufacturing center is a type of circular pyxis, distinctive in shape and material. The shape at its best is shown by Nos. 2-4 (Figs. 2-4). The material of which these vessels are made is easily recognizable. It may be pale green, olive-green, gray-green, greenish-blue, yellowish, yellowish-green, yellowish-brown or even colorless, but there is almost always a muddy appearance and frequently a soap-like texture which is not to be mistaken and which (with a few exceptions to be mentioned later) is not found in other shapes of glass vessels. All the pyxides of this type were moulded, all were polished (generally the entire surface), and almost all bear deeply engraved (usually not lathe-cut) grooves around the top of the base, some on the bottom as well; the better specimens also have grooves around the lids. A few of the pyxides exhibit rather elegant profiles (e.g., Nos. 1-5), probably produced by grinding the surface after removal from the mould; most of them, however, are fairly crude in shape. In general, there seems to have been little attempt to fit the lids to the pyxis rims: many of the lids are either too small or too large.

Catalogue of Glass Pyxides[5]

1. Louvre Museum MNB 878. Pyxis with lid (Fig. 1). Height without lid 1⅝″ (0.041). Diameter of base 4¾″ (0.12); diameter of rim 5⅛″ (0.13).

Olive-green, with impurities and many small bubbles. Grooves around upper surface of base, and rim grooved to receive lid. Gift of G. de Vaux, 1875. From Rhodovani (Elyros), Crete.

2. Rethymno Museum, 26. Pyxis with lid (Fig. 2). Height without lid 1½″ (0.039); with lid 2¾″ (0.06). Diameter of lid 4⅜″ (0.113); of base 4½″ (0.115).

Pale green, with some impurities and bubbles. Rim grooved to receive lid, and lid

FIG. 2. *Rethymno, 26*

FIG. 3. *Rethymno, 27*

FIG. 4. *Brussels, A 2243*

5. All the specimens are intact except where breakage is mentioned. Weathering is not mentioned unless it varies from the usual type – a dulling of the surface. Measurements are given in meters and have been converted by the editors into inches with approximations to ⅛″.

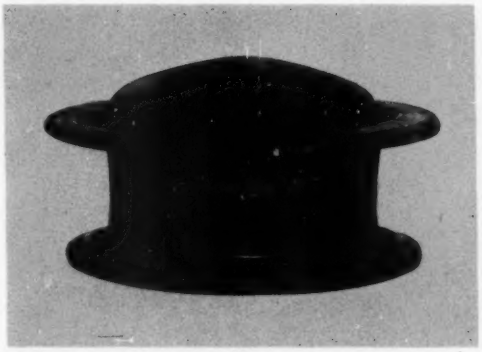


FIG. 5. *Copenhagen, 998*

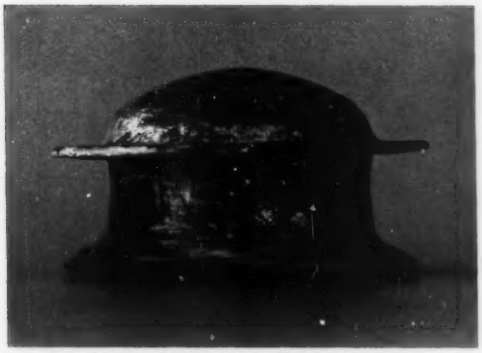


FIG. 6. *British Museum, 79.7-15.1*

FIG. 7. *British Museum, 91.4-1.3*

grooved underneath to match. Concentric circles engraved on lid and base. From Crete.

3. Rethymno Museum, 27. Pyxis (Fig. 3). Height 1⅝″ (0.042); diameter of base 4¾″ (0.12).

Yellowish-brown. Similar to No. 2 except for different number of grooves around top of base. From Crete.

4. Brussels Museum, A 2243. Pyxis with lid (Fig. 4). Height with lid 2¾″ (0.07); diameter of lid 4⅛″ (0.104); diameter of base 3⅞″ (0.10).

Greenish, in places olive-green. Two series of engraved concentric grooves on the lid; engraved grooves on upper surface of base and concentric circles on the bottom. Acquired in 1922 as part of the bequest of Mr. Rosseels, Belgian consul in Athens for more than twenty-five years.

5. National Museum, Copenhagen, 998. Pyxis with lid (Fig. 5). Height with lid 2⅜″ (0.06); without lid 1¾″ (0.043). Diameter of lid 4½″ (0.113); of base 3⅞″ (0.10).

Dull greenish. Two narrow grooves around central base of lid, two around top of base. Purchased 1877, provenience unknown.

6. British Museum, 79.7-15.1. Pyxis with lid (Fig. 6). Height without lid 1¼″ (0.031). Diameter of base 3⅜″ (0.085); of lid 3⅝″ (0.091).

Part of rim of lid missing. Light amber, with many tiny bubbles and black spots. Two grooves on upper surface of base. Rim of pyxis grooved to receive lid, and lid grooved to match. Purchased 1879, provenience unknown.

7. British Museum, 91.4-1.3. Pyxis with lid (Fig. 7). Height without lid 1¾″ (0.043). Diameter of base 4⅛″ (0.104); of lid 4¾″ (0.121).

Buff-colored, bubbly with many black spots.

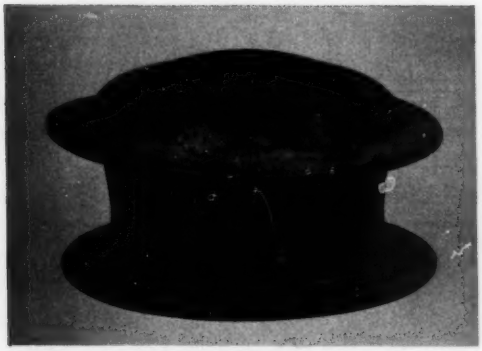


FIG. 8. *R. W. Smith, 1216*

FIG. 9. *Boston, 81.343*

FIG. 10. *Boston, 81.345*

FIG. 11. *Boston, 81.344*

Grooves around upper surface of base and concentric circles engraved on bottom. Rim grooved to receive lid, but lid has no corresponding groove and does not fit well. Purchased in 1891, provenience unknown.

8. Ray Winfield Smith Collection, 1216. Pyxis with lid (Fig. 8). Height 2¼″ (0.056). Diameter of base 4⅛″ (0.105); of lid 4¼″ (0.107).

Yellowish, with bubbles and impurities. Grooves around upper surface of base. Cover does not fit well. Acquired from Greece. *Glass from the Ancient World, The Ray Winfield Smith Collection*, Corning, 1957, No. 172.

9. Boston Museum of Fine Arts, 81.343. Pyxis (Fig. 9). Height 1¾″ (0.045). Diameter of base 4⅝″ (0.117); of rim 3⅛″ (0.08).

Pale yellowish-green, muddy-looking. Grooves around top of base, concentric grooves on the bottom. Rim grooved to receive lid. Very well finished specimen, like the Rethymno and Brussels pieces; the best of the Boston examples. Purchased in Crete by H. P. Kidder.

10. Boston Museum of Fine Arts, 81.345. Pyxis (Fig. 10). Height 1⅜″ (0.033). Diameter of base 3½″ (0.09); of rim 2⅝″ (0.069).

Yellowish-green. Grooves around top of base; groove at rim. Purchased in Crete by H. P. Kidder.

11. Boston Museum of Fine Arts, 81.344. Pyxis (Fig. 11). Height 1⅜″ (0.034). Diameter of base 3⅝″ (0.092); of rim 2⅝″ (0.068).

Pale green. Very heavy, and somewhat irregular in shape. Top of base grooved. Purchased in Crete by H. P. Kidder.

12. Boston Museum of Fine Arts, 81.341. Pyxis lid (Fig. 12). Diameter 5⅛″ (0.13).

Yellowish, muddy-looking. Concentric circles engraved on top. Purchased in Crete by H. P. Kidder.

13. Boston Museum of Fine Arts, 81.340. Pyxis lid (Fig. 13). Diameter 5⅛″ (0.13).

Pale yellow. Purchased in Crete by H. P. Kidder.

14. Boston Museum of Fine Arts, 86.50. Pyxis lid (Fig. 14). Diameter 3⅞″ (0.10).

Yellow. No grooves. Purchased in Crete by M. Brimmer.

15. Boston Museum of Fine Arts, 81.191. Pyxis lid (Fig. 15). Diameter 3⅞″ (0.10).

Colorless. Similar to preceding. Purchased in Athens by B. W. Crowninshield.

FIG. 12. *Boston, 81.341*

16. Boston Museum of Fine Arts, 87.418. Pyxis (Fig. 16). Height 1⅝″ (0.041). Diameter of base ca. 4½″ (0.113); of rim 3½″ (0.089).

Light green. Heavy, and irregularly shaped. Grooves around top of base and concentric grooves on bottom. Rim grooved for lid. Purchased in Athens by B. W. Crowninshield.

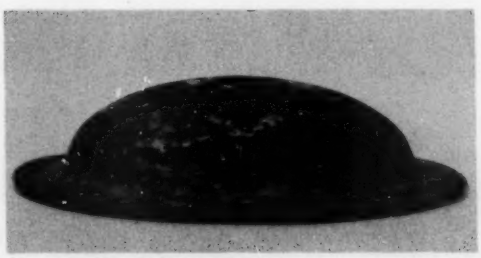


FIG. 13. *Boston, 81.340*

FIG. 14. *Boston, 86.50*

FIG. 15. *Boston, 81.191*

FIG. 16. *Boston, 87.418*

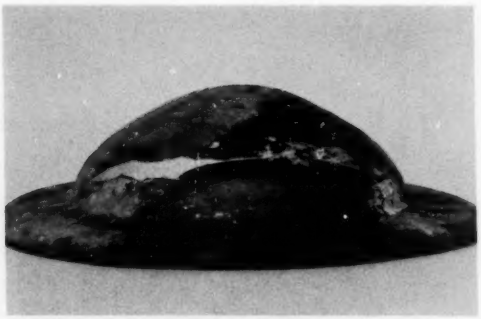


FIG. 17. *Boston, 87.419*

FIG. 18. *Athens, 12523*

FIG. 19. *Athens, 3074*

17. Boston Museum of Fine Arts, 87.419. Pyxis lid (Fig. 17). Diameter 4⅜″ (0.111).

Yellowish, very heavy. Concentric grooves cut on top. Broken and mended. The lid was donated with No. 16 (87.418) but it does not fit (too small). Purchased in Athens by B. W. Crowninshield.

18. Athens National Museum, 12523. Pyxis with lid (Fig. 18). Height without lid 2⅞″ (0.074); with lid 3¾″ (0.096). Diameter of base 6⅜″ (0.162); of rim 5½″ (0.139); of lid 6¾″ (0.172).

Olive-green, heavy material. Three engraved grooves around top of base, two concentric grooves around bottom. Edge of rim uneven; cover does not fit well. This shape is noticeably different from most of the others, but the material is exactly the same. Provenience unknown.

19. Athens National Museum, 3074. Pyxis (Fig. 19). Height 3⅛″ (0.078). Diameter of base 6¼″ (0.158); of rim 5¼″ (0.133).

Olive-green, almost identical with No. 18. Somewhat more crudely made. The base is smaller, and plain except for one shallow groove (perhaps not cut) on the bottom near the edge. Provenience unknown.

20. Athens National Museum, 2690. Pyxis lid (Fig. 20). Diameter 6⅝″ (0.167).

Colorless with yellow tinge. Heavy material. Shape rather irregular and crude; outside perhaps unpolished. From a tomb in Attica.

21. Athens National Museum, 2993. Pyxis lid (Fig. 21). Diameter 7⅛″ (0.18).

Gray-green. Small bubbles. No grooves. Provenience unknown.

22. Athens National Museum, E 1529. Pyxis. Height 1¾″ (0.045). Diameter of base 4″ (0.101).

Pale green. Similar in shape to No. 2. Engraved concentric circles on bottom. Provenience unknown.

23. Canea Museum, 52. Pyxis. Height 1⅝″ (0.04). Diameter of base 5⅛″ (0.13).

Greenish-blue. Engraved grooves around top of base. Rim ground unevenly. Interior perhaps unpolished. From the Tsibounakis Collection, which is mainly from Elyros.

24. Canea Museum, 18. Pyxis lid. Diameter 5⅛″ (0.13).

Olive-green. Engraved circles on top, similar to No. 2. Exterior polished. From the Tsibounakis Collection.

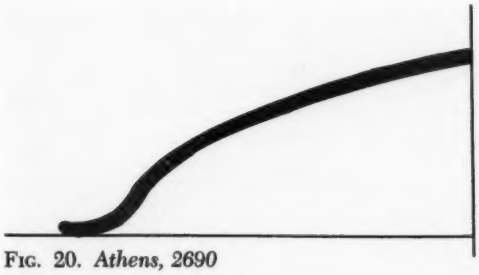


FIG. 20. *Athens, 2690*

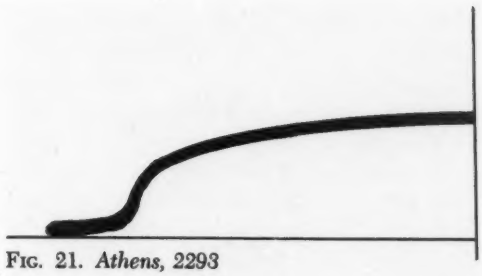


FIG. 21. *Athens, 2293*

25. Canea Museum, 17. Pyxis lid. Diameter 5¼" (0.134).

Olive-green. Cruder than No. 24, also with higher center and wider rim. Polished. No engraving. From the Tsibounakis Collection.

26. Boston Museum of Fine Arts, 81.342. Pyxis lid. Diameter 4" (0.101).

Rim broken. Greenish; flaky "enamel" weathering. No grooves. Probably belongs to No. 11 (81.344). Purchased in Crete by H. P. Kidder.

When we survey the provenience of these pyxides some fairly consistent information emerges. It seems that in the 1870's and 1880's a good many European travelers made a tour of Crete, or at least touched the island at some point. Like tourists since time began, they looked for souvenirs to bring home. Many must have purchased vases, coins and figurines, but those with whom we are concerned brought back one or more glass pyxides. In 1875 G. de Vaux presented such a pyxis (No. 1) to the Louvre Museum; H. P. Kidder gave three (Nos. 9-13, 26) to the Boston Museum of Fine Arts in 1881; Martin Brimmer presented a pyxis lid (No. 14) to the same museum in 1886. All these objects had been purchased by the donors in Crete. In 1881 B. W. Crowninshield bestowed on the Boston Museum a glass pyxis lid (No. 15) which he had bought in Athens; then in 1887 he gave a complete specimen (No. 16) which he had also acquired in Athens. In the well known Julien Gréau Collection was a pyxis which was probably acquired during this period (M. Gréau died in 1895).[6] In the Musée du Cinquantenaire, Brussels, is another such pyxis (No. 4), received in 1922 as part of a bequest from a collector who had lived more than twenty-five years in Athens. Exactly where he purchased it is not known.

At least five such pyxides (Nos. 18-22) are in the National Museum in Athens, one recorded as found in a grave in Attica, the provenience of the others unknown. The Ray Winfield Smith Collection includes one pyxis of this kind (No. 8), acquired from Greece.[7] In the museum of Rethymno, in north central Crete, there are two of these pyxides (Nos. 2, 3), without recorded provenience. In the Canea Museum, farther west on the north coast, there is one pyxis and two lids (Nos. 23-25), neither of which belongs to the pyxis. These are part of a collection said to have come mainly from Elyros, in southwestern Crete. In the Herakleion Museum there are no such pyxides, a fact which may be significant.

Wilhelm Froehner, in his publication of the Charvet Collection (1879), said: "A Rhodovani, l'ancienne Elyros, on a trouvé une pyxis avec son couvercle et un canthare de forme très élégante, qui sont aujourd'hui au Louvre. Plusieurs de ces pyxides, à parois épaisses et en pâte

6. W. Froehner, *Collection Julien Gréau*, Paris, 1903, No. 1067, Pl. 179,1. The pyxis is described as greenish in color, height 3" (0.075), diameter 5⅜" (0.136). The provenience is not mentioned. The present whereabouts of this pyxis is unknown to me.

7. *Glass from the Ancient World, The Ray Winfield Smith Collection*, Corning, 1957, No. 172. No. 171 in this catalogue represents an entirely different and unrelated type of pyxis, of much finer workmanship. This type is made of much better material, was lathe-turned and has thinner walls.

verdâtre mal affinée, ont été vendues à Paris par les marchands d'antiquités établis à Athènes."[8] The pyxis from Rhodovani, now in the Louvre (No. 1), is undoubtedly the one donated by M. de Vaux. As for the pyxides sold on the Paris market, we know of at least two examples. One (No. 5) was purchased in Paris in 1877 by the National Museum, Copenhagen, the other (No. 6) in 1879 by the British Museum, which also has a second example (No. 7), acquired in London in 1891.

The rarity of these pyxides cannot be too strongly emphasized. When one considers the huge numbers of glass vessels now in museums, it is remarkable that only these few examples could be located.[9] In the other museums of Greece, in Italy, Turkey and other countries which I have visited there appear to be no glass vessels of this kind. Even more remarkable is the fact that almost all of these pyxides can be traced to Greece, eleven of them to Crete, and four of these to a specific town in Crete.

Judging from the shape and the material, there cannot be the slightest doubt that all the examples have a common origin, and, considering the recorded proveniences, there is good reason to assume that their place of origin was the island of Crete. Since in ancient times these pyxides seem to have wandered very little, it may be possible to fix the place of manufacture rather closely. As we have noted above, no pyxides are in the Herakleion Museum, while several are to be found at Canea and Rethymno. If any had turned up in eastern Crete they would be in the Herakleion Museum; therefore it seems not too bold to assume that they originated in western Crete. When we find, furthermore, that four specimens are known to be from Elyros (modern Rhodovani) we have some indication as to where to look for the factory that produced them. The pyxides were of course found in graves, or they would probably not be intact, as they are; moreover, Elyros is in the mountains. A glass factory would more likely be on the seacoast. It is along the south shore of western Crete – now sparsely inhabited but fairly well populated in Classical times – that we must search for this factory.

At the end of the nineteenth century a detailed archaeological survey of western Crete was undertaken by two Italian scholars, Savignoni and De Sanctis.[10] The former reported on topography and monuments, the latter on inscriptions. They noted at Elyros (identified by a proxeny decree) traces of walls, a theatre, a Roman aqueduct, sculptured tombstones and a ruined Turkish fortress. They also recorded objects which had been found there in graves. These included an unusual number of marble pyxides, apparently all of an elaborate type with a high foot. Savignoni remarks:[11] "Other complete or fragmentary marble vases of this form were seen by me in Rhodovani houses; others are to be found in the collection of the Syllogos at Rethymno, from an unknown provenience, and one also in the Museum of the Syllogos at Candia,[12] likewise coming from Elyros. In view of their frequency in this city it is not impossible that it was the center or one of the centers of manufacture; in any case these same (pyxides), like the corresponding ones of terra cotta, are among the characteristic finds of the western region of Crete."

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8. W. Froehner, *Collection Charvet*, p. 120.

9. Two other pyxides have been reported to me but are not included in the catalogue. Dr. Axel von Saldern kindly informs me that in the Bayerlein Collection, Munich, there is one without a lid; and I learn from Dr. Thea E. Haevernick that there is a pyxis lid (No. 269) in the Egyptological Institute of London University.

10. Luigi Savignoni and Gaetano De Sanctis, "Esplorazione archeologica delle provincie occidentali di Creta," *Monumenti Antichi*, XI, 1901, cols. 285-550. The accounts of earlier travelers (Pashley, Spratt) as well as those of later explorers (e.g. Pendlebury) are useful in a general way but do not give specific information concerning objects.

11. *Op. cit.*, cols. 437-438.

12. This pyxis is in the Herakleion (Candia) Museum, and with it two of a simpler type (discussed below) which Savignoni may have seen but did not mention.

FIG. 22. *Marble. A. Herakleion, 11*

FIG. 23. *Marble. B. Boston, 86.54*

When speaking of Lissos, a town on the south coast not far west of Syia, the port of Elyros, Savignoni reports that there was here "a whole city of tombs," and that in one he found a fragment of a marble pyxis, while in others were fragments of three different marble lekanides.[13]

It seems reasonable to assume, as Savignoni suggested, that Elyros or some other nearby town was the center of an industry producing marble vases, particularly pyxides. Study of Crete's geological formations shows that limestone and marble exist in the region.[14] Although Savignoni noted some glass vessels, these were common free-blown types of a later period, not resembling the pyxides in any way. Glass pyxides did not come to his attention. However, as we have mentioned above, glass pyxides *have been* found in Elyros. I should like to suggest that the glass pyxides were deliberate imitations of marble ones, manufactured either because the marble supply was dwindling or because cheaper products were desired. The kind of marble pyxis which the glass specimens imitated is not, however, the elaborate footed type but a more modest variety of which we show five examples (A-E; Figs. 22-26).[15] These are all of Greek origin but only two of them are known to be specifically from Crete. *A*, now in the Herakleion Museum, is from Elyros itself (Fig. 22); another in the same museum (not illustrated) is also from that site. *B* was purchased in Crete and presented to the Boston Museum of Fine Arts by Martin Brimmer (Fig. 23), who also, as mentioned above,

13. *Op. cit.*, col. 455. At Lissos there has recently been found a large number of marble statues, apparently belonging to a sanctuary of Asklepios.

14. Leland G. Allbaugh, *Crete, a Case Study of an Underdeveloped Area*, Princeton, 1953, map facing page 286.

15. A Herakleion Museum, 11. Height 1⅝" (0.036). (Fig. 22).
B Boston Museum of Fine Arts, 86.54. Height 2⅛" (0.053). (Fig. 23).
C Boston, 81.354. Height 2⅛" (0.056). (Fig. 24).
D Boston, 81.352 and 81.353. Height 1¾" (0.045). (Fig. 25). The material, Miss Palmer tells me, is a coarse-grained marble; there is red paint around the central knob of the lids of *B* and *C*, and also either between the ridges (on *B*) or on the outer ridge (*C*). In the publication of these three pyxides (*Bulletin of the Museum of Fine Arts*, XXXVII, 1939, pp. 74-80) they are dated to the 5th cen. B.C., but no reasons for the date are stated.
E Brussels Museum, A 2215. Height 1¾" (0.045). (Fig. 26). Another is not illustrated: Brussels, A 2216. Height 2⅛" (0.055). Both pyxides, Miss Verhoogen informs me, are "of coarse-grained and very scintillating white marble. There are traces of red paint on the knobs and between the central rings."
Three more marble pyxides, two with knobbed covers, the third with a plain cover, are illustrated in *Bulletin van de Vereeniging tot Bevordering der Kennis van de Antieke Beschaving*, I, 1926, p. 8. These, with knobbed lids, are dated late 5th and early 4th cen. B.C., and one is said to come from Corinth. The pyxis with plain lid (like our example *A*) is thought to be later in date.

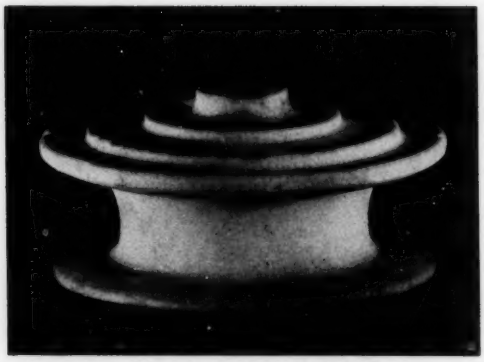

FIG. 24. *Marble. C. Boston, 81.354*

FIG. 25. *Marble. D. Boston, 81.352; 81.353*

presented a glass pyxis lid. The proveniences of *C* and *D*, in the same museum, are not known, but it is worth noting that they were the gift of Henry P. Kidder, the donor of three glass pyxides purchased in Crete (Figs. 24-25). Must we accept this as a remarkable coincidence, or are we not justified in guessing that all these pyxides, marble and glass alike, came from Crete? Another marble pyxis illustrated here *E* (Fig. 26) is one of a pair in the Brussels Museum which was part of the same bequest as the glass pyxis No. 4. Many terra cotta pyxides are also known, but those I have seen do not provide such striking parallels as the marble ones. A wooden pyxis from Kertch[16] is similar but not identical.

The peculiar unsuitability of the pyxis shape for glass manufacture is further evidence that the marble pyxis was the original and the glass the imitation. The glassmaker's effort to reproduce the marble is obvious, especially in such examples as the Rethymno and Brussels pieces (Nos. 2-4), where engraved circles on the lid and the upper surface of the base are obvious imitations of the more deeply tooled marble. The color and texture of the glass are also rather marble-like, but we cannot be sure that these were controlled factors.

FIG. 26. *Marble. E. Brussels, A 2215*

The glass pyxides were certainly made in moulds, but no moulds have been found, and there is some uncertainty as to the method used. A method proposed by Dr. Frederic Schuler[17] is that they were cast in ceramic moulds which must either have been made in sections or else by the "lost wax" process. If sectional moulds were used, polishing would have removed traces of joins. The objects were made, in Dr. Schuler's opinion, from crushed glass, or frit. This would be put into the mould, which would then be placed in a furnace until the glass melted down and filled all the empty space – a process which could take hours or

16. *Archaeologischer Anzeiger*, 1955, p. 19, Fig. 12. No definite date is known for this pyxis.

17. I am indebted to Dr. Schuler for permitting me to mention his theory in advance of its publication in *Archaeology*, 12, 1959.

days, depending on the temperatures involved. Dr. Schuler points out that if this theory is correct, the air bubbles in the walls of the pyxides should be spherical, as no tension would have caused them to be deformed, while pressing in a mould would cause the glass to flow and the bubbles would be distorted and non-spherical. In all the pyxides which I have been able to examine, the bubbles are indeed spherical.

When we look for other products of this factory, we do not find a great deal. In the museums of Crete there are no other vessels of the same kind of material. In the National Museum, Athens, there is, however, a moulded bowl (part of the Empedocles Collection and without recorded provenience) which seems to be of material identical with that of the pyxides and also of similar technique.[18] We illustrate it here (Fig. 27).

FIG. 27. *Athens, E 1526*

This, then, is the sum total of the evidence for a Cretan glass factory. Just when it was in operation is difficult to say until some of its products are found with datable material. From the evidence of the glass itself – made rather inexpertly from material not well refined, and in a shape not at all suited to the properties or potentialities of glass, but rather to stone or wood – one might venture a date as early as the third century B.C. for its beginning, and one might guess that it was in operation as late as the first century B.C. It should be noted that Savignoni and De Sanctis mentioned that nothing they found at Elyros could be dated earlier than the fourth century B.C. The most satisfactory answer would be obtained by locating the factory; the next best thing would be to find pyxides in datable graves.

* * *

A recent inspection of the site of Elyros showed that there still must be many unopened graves which could yield significant finds of glass. At Syia, on the coast, nothing of importance was observed, nor at Lissos to the west. But at Tarrha, a seaport east of Syia, there seemed to be more glass fragments on the surface than usually occur at a Classical site (though none from this kind of pyxis were noted). Perhaps here, or even still farther east, there may have been a glassmaking center.

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18. Athens National Museum, E 1526. Height 2¾" (0.074), diameter 4¾" (0.124): Brownish-gray, unweathered, with small bubbles and impurities. Polished on rim, outside below rim, and all over the interior. Three grooves (not lathe-cut) around the outside.

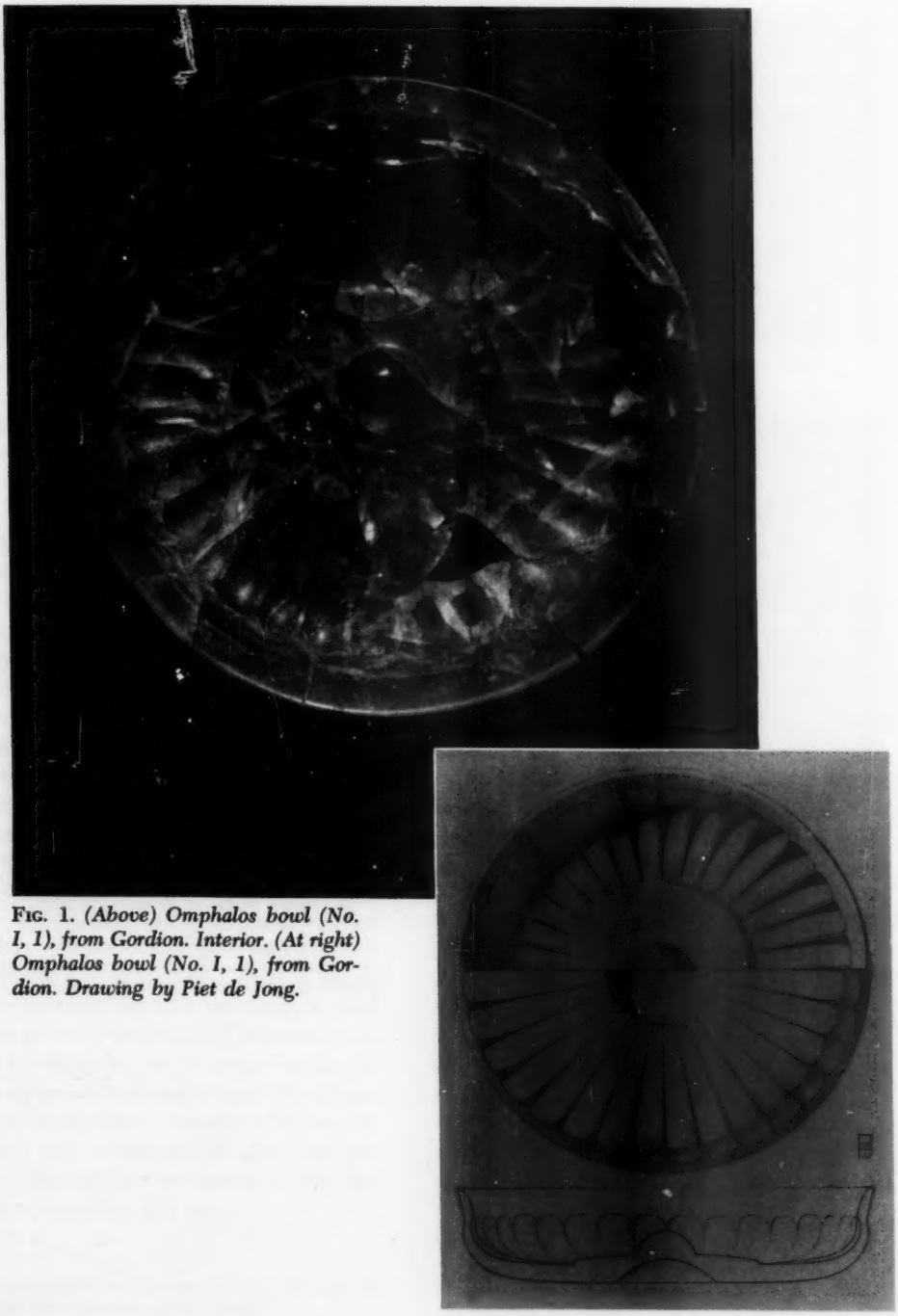

FIG. 1. *(Above) Omphalos bowl (No. I, 1), from Gordion. Interior. (At right) Omphalos bowl (No. I, 1), from Gordion. Drawing by Piet de Jong.*

GLASS FINDS AT GORDION

AXEL VON SALDERN

DURING the excavations at Gordion in central Turkey from 1950 to 1957, an archaeological team from The University of Pennsylvania Museum under Dr. Rodney S. Young found more than two hundred glass specimens.[1] Among these are two vessels and a number of fragments which should be of the greatest interest to the archaeologist, glass historian, and technologist. The objects are: (Group I, 1) a clear omphalos bowl of the late 8th century B.C.; (Group II) fragments of a few Hellenistic vessels of transparent cut glass; (Group III, 1) a fragmentary Hellenistic gold-glass bowl; (Group IV) fragments of a blown vessel of undetermined date.

The purpose of this paper is to investigate these glasses.[2] Their importance must be emphasized for they may help to clarify aspects of the rather obscure history of pre-Roman glass, particularly as most of the objects are well dated. The suggestions put forward in the following are only tentative; the history of glass during this period cannot suddenly become clear through the introduction and interpretation of a few, mostly fragmentary, glasses.

The description of the omphalos bowl (Group I, 1) should be preceded by a few general remarks:

(1) A comparatively small number of vessels of transparent glass from ca. 725 B.C. to 300 B.C. has survived in contrast to the great number of beads, inlays and cored vessels. Many of the former cannot be dated accurately. Even less certain are their places of manufacture. The following characteristics, however, might justify grouping them together:

(a) the preferred form seems to have been the bowl (although other shapes occur) and all were based on prototypes in metal, stone and ceramic.

(b) the material is clear or greenish (less

1. Included in this number are over 100 beads, mainly of the 2nd half of the 1st millennium B.C.; 27 fragments of core vessels and one fragmentary cored alabastron (*Archaeology*, 8, Autumn 1955, p. 197) of Eastern Mediterranean origin, 6th-3rd cen. B.C.; a number of pendants and inlays; about two dozen fragments and one unbroken "tear bottle" of Roman Imperial blown glass. Preliminary excavation reports were published in the *Univ. of Pennsylvania Bull.*, 16, 1952 and ff.; *American Journal of Archaeology*, 58, 1954 – 62, 1958; *Archaeology*, 3, 1950 – 11, 1958. For abbreviations cf. *American Journal of Archaeology*, 62, 1958, pp. 3-8.

2. The author spent parts of June and July of 1957 at Gordion. This was made possible through a grant of The Corning Glass Works Foundation. He is deeply indebted to Mr. Donald B. Harden, The London Museum, who generously provided valuable information which has been incorporated in this paper. He is, furthermore, very grateful to Mr. Young whose cooperation facilitated the study of the Gordion finds. He would, finally, also like to thank the many people who were most helpful regarding this paper; especially Professor M. E. L. Mallowan, University of London; Mr. Ray W. Smith, Dublin, New Hampshire; Mr. Bay Raci Temizer, Arch. Museum, Ankara; and Messrs. Barnett, Higgins, and Wiseman, British Museum.

frequently blue) transparent glass.

(c) the vessels were probably all made by similar forming processes and usually cut and polished.

(d) they are rare and mostly of high quality, thus suggesting that they were among the glass luxury ware of that time, possibly equal to bowls made of precious metals and rock crystal.

(2) The shallower vessels were probably made by putting crushed or powdered glass or frit in an open mold which was subsequently heated for a long period of time. A second positive mold was put either on top before heating or pressed down later when the glass was in a viscous state. It is less likely that the glass was poured in a fluid state into the first mold – even if the mold was preheated. This method seems impractical as the heat required to bring the glass to such a fluid state would probably have been difficult for a glassmaker of the 1st millennium to obtain. For more complicated shapes, for example the Hellenistic "finned" bowls (p. 38), another technique based on the lost wax process may have been used. By this method the complete filling of the negative design in a block mold with glass and the removal of the mold after the object was finished would be required.[3]

(3) Stylistic analysis of such an object may help to establish an approximate date when the find circumstances are unknown or insufficient. The great problem, however, lies in the fact that the comparative material consists largely of inadequately dated vessels of glass, metal, stone, etc.[4] But even if the comparative material were well dated, one should hesitate to try to attribute absolute (or even relative) dates because:

(a) the glassmaker may have copied objects made earlier in other materials.

(b) the glassmaker may have copied contemporary forms in other materials.

(c) the glassmaker may have copied much earlier glass forms (glassmaking has always been a highly traditional craft).

(4) The places of manufacture of the objects under discussion cannot in many instances be determined. No factory source has been found to which even one could be assigned with confidence. There are also problems of a general nature: Did each factory produce many different types, or did each specialize (cored glass, clear vessels, etc.)? There are good reasons for both theories: as a great variety of colors is found in cored vessels and beads and as many of these vessels have handles of clear glass, one might tend towards the first solution. On the other hand the high quality and obvious preciousness of the group of transparent glass vessels suggest one or very few factories and/or cutting shops specializing in luxury ware. One might also ask where the many inlays and beads, mostly of greenish glass, were made which occur on so many Near Eastern sites during the 1st millennium B.C.

Credit should be given to two scholars who early recognized the importance of transparent glass vessels in the history of glass of pre-Roman date. The late Poul Fossing wrote two basic studies[5] in which many valuable references can be found. The other is the late Michael Rostovtzeff whose numerous works contain extremely useful material.[6] Any investi-

3. To our knowledge, Mr. Frederic Schuler, formerly with The Corning Museum of Glass, has been the first to suggest that the lost wax technique was used in making such vessels, a method employed by Frederick Carder, the founder of Steuben Glass. Mr. Schuler will deal with it in the Spring issue of *Archaeology*, 1959.

4. On the problem of dating metal work cf. B. Goldman, "Luristan Pitchers," *Artibus Asiae*, XX, 4, 1957, p. 252.

5. "Drinking Bowls of Glass and Metal from the Achaemenian Time," *Berytus*, IV, 1937 (publ. 1939), pp. 121-9; Pl. XXIII. *Glass Vessels Before Glass-Blowing*, Copenhagen, 1940.

6. Cf. especially *The Social and Economic History of the Hellenistic World*, Oxford, 1941.

gation of this subject should include these works. In the near future the author hopes to prepare a study of the whole non-cored glass industry of pre-Roman date and its consequent effect on Roman glass.

GROUP I

1. *Bowl with omphalos, from Gordion, Tumulus P,* late 8th century B.C. (Figs. 1-2).[7] The object is heavily broken and mended, in all about one square inch is missing. The glass is

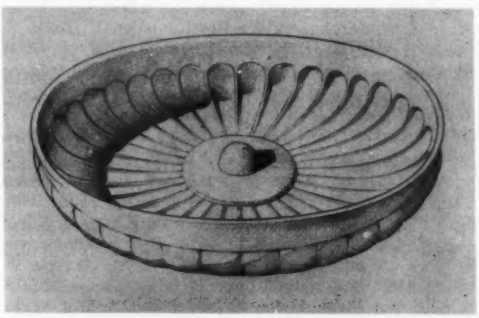

FIG. 2. *Omphalos bowl (No. I, 1), from Gordion. Drawing by Piet de Jong.*

clear with slight yellowish-green tinge; in transmitted light it is practically colorless. There are a few small spherical bubbles unevenly distributed. Many "pinprick" bubbles are detectable only under magnification: The surface, containing several small "stone" impurities, is slightly dull through decomposition except for the omphalos. The pitting seems to be heavier on the exterior. There are, in addition, a few specks of brownish decomposition and very small areas of red-brown stain, the cause of which is unknown. The decomposition and the stains, however, are of minor importance; the glass is transparent and comparatively well preserved.

The profile of the shallow bowl curves to a slightly spreading rim. The exterior of the rim is straight, the interior flares towards the edge. The underside of the bowl is flat. At its center there is a deep concavity corresponding to the rounded bulge of the omphalos on the interior. Thirty-two raised petals radiate from this concavity. The relief of these increases towards the curve of the bottom and diminishes as they approach the rim, vanishing at a point about 3/16" (1.5 cm.) below the edge. On the interior the omphalos emerges from a disk that slopes down towards a step from which thirty-two flutes radiate. These flutes start at a point further away from the center than the outer petals, each ending at a point about 3/8" (1.0 cm.) below the rim in a distinct round arch. While the widths of each of the outer petals vary only very slightly, the widths and depths of the inner flutes vary considerably.

The object was probably made either by letting crushed glass sag into a mold or by the lost wax process. After cooling, the interior was ground and the design was deepened with the help of a cutting tool, probably a revolving wheel. The outside was ground, at least along the rim.

The mold left a fairly good impression on the exterior of the glass as there seems to be no indication that the petals were touched up with a cutting tool. The thickness of the central section of the bowl was a problem for the glassmaker. He seems to have added more glass here during the process of manufacture: on the underside just off center a piece of approximately half the thickness of the bowl had flaked off leaving a clean smooth break parallel to the bottom.

7. No. 4000 G 206. H. 1 3/8"-1 1/2" (3.5-3.8 cm). D. rim, 6"-6 1/2" (15.2-15.7 cm). Variations might stem from the mending. Thickness of the glass varies from about 1/16" to 3/16" (1.0 cm) at the thickest part at the bottom. Published: *Illustrated London News,* November 10, 1956, p. 799, Fig. 11. *Archaeology,* 9, No. 4, Winter 1956, p. 266. *Turkish Review of Archaeology,* VII, No. 1, 1957, pp. 32-3. Detailed find circumstances in R. S. Young, "Gordion 1956: Preliminary Report," *A.J.A.,* 61, No. 4, 1957, pp. 325-31; Pl. 94, Fig. 32. All objects found at Gordion are presently in the storeroom at Gordion, with the exception of the mesomphalic bowl now on exhibition at the Archaeological Museum, Ankara, and the fragment No. 504 G 33 now in the storeroom of the Ankara Museum. All objects treated in this paper have been numbered for reasons of clarity.

The mold probably left only a faint impression of the interior design – if it had been incised at all. The flutes were worked over to a considerable degree with the help of a rotating cutting tool. The flutes reach their greatest depths in relation to the thickness of the glass at the shoulder region of the vessel, i.e. at the most pronounced curvature. Thus, the arched terminations of the flutes become very pronounced and sharp. By deepening the flutes the ridges between them became sharp and blade-like and were subsequently flattened by grinding. They also vary considerably in width along their axes. Parallel tool marks are clearly visible on the flutes and the ridges.

The interior rim section was ground down, either by hand or with a rotating wheel, or both. This is quite obvious when looking at the flaring interior edge. The whole vessel was finally polished.

No lathe (a machine rotating the object against which a cutting tool is pressed) appears to have been used in any of these operations. A groove was cut around the exterior rim about ¼" (0.6 cm.) below the edge. The bowl was pressed at least four times against a rotating wheel: one can see the starting and termination points of four individual cuts roughly touching each other. This groove also varies in width and depth and its height varies in relation to the edge of the bowl. If a lathe was used at all it would certainly have been used here, which does not appear to have been the case.

This description cannot do justice to the quality and attractiveness of the bowl. One has to consider it in relation to other achievements of this period. It becomes evident then that the clear glass material is in itself an astonishing accomplishment. The cutting operation helped to sharpen and emphasize the pattern. The irregularities created by this process make the design more lively; the stereotyped pattern achieved with a mold has gone in favor of a spontaneous crispness of design and outline.

The bowl was found inside an omphalos bowl of bronze when Tumulus P was opened.[8] The glass bowl, however, derives not from a type represented by this bronze vessel but from other metal prototypes which have not been found at Gordion proper. These are generally associated with Assyria and dated roughly in the 9th-7th century B.C.[9] The bowls carried by personages on Assyrian reliefs, again ranging from the 9th-7th century B.C., are very similar to these bowls.[10] While the metal bowls are

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8. Similar to *A.J.A.*, 61, Pl. 93, Fig. 31. For Phrygian omphalos bowls cf. G. and A. Körte, "Gordion. Ergebnisse der Ausgrabung im Jahre 1900," *Jb. d. K. Arch. Inst.*, 5, Ergänzungsheft, Berlin, 1904, pp. 72-3. T. Oezgüç and M. Atok, "Die Ausgrabungen an zwei Tumuli auf dem Mausoleumshügel bei Ankara," *Belleten (Rev. Publ. par la Soc. d'Hist. Turque)*, XI, January 1947, pp. 65-6, Pl. XXII. E. Akurgal, *Phrygische Kunst*, Ankara, 1955, p. 85.

9. For a basic study on omphalos bowls cf. Heinz Luschey, *Die Phiale*, Diss. Munich, Bleicherode, 1939. The type represented by the Gordion bowl is called *Zungenphiale:* p. 76 ff. This book gives numerous references to objects and literary sources. Assyria is thought to be the country of origin of the *Zungenphiale:* p. 83 ff. For glass *phialae* of the 4th cen. B.C. cf. M. L. Trowbridge, *Philological Studies in Ancient Glass*, Univ. of Ill., 1930, p. 163. For metal parallels of the Gordion glass bowl, cf. especially the Luristan bowls with petalled decoration, one with omphalos: A. Godard, *Les Bronzes du Luristan*, Paris, 1931, Pl. LXI, No. 222, Pl. LXII, No. 224, Pl. LXIII, No. 226. For Luristan date cf. recently R. Girshman, *Iran*, Penguin, n. d. (1954), p. 106. B. Goldman, *op. cit.*, pp. 251-264. Cf. also many bronze bowls, published by O. Montelius, *Die vorklassische Chronologie Italiens*, Stockholm, 1912, Pl. 13, No. 4, Pl. LVI, No. 4. *Idem, La Civilisation Primitive en Italie*, Stockholm, 1895-1910, I, Pl. 86, No. 2; II, Pl. 184 ff. A shallow bronze bowl found at Hallstatt, with rounded bottom and short spreading rim, has 46 ribs radiating from a central omphalos: E. v. Sacken, *Das Grabfeld von Hallstatt*, Vienna, 1868, p. 105, Pl. XXV, 3. For more parallels cf. also C. D. Curtis, *The Bernardini Tomb, Mem. American Acad. in Rome*, 3, 1919, No. 67, 85; Pl. 47, 2: 1st half 7th cen. H. Th. Bossert, *Altsyrien*, Tübingen, 1951, No. 788, center: 6th cen.(?), from Deve Hüjük, near Karchemish. (Cf. for Karchemish C. L. Wooley, "Hittite Burial Customs," *Annals of Arch. and Anthrop. University of Liverpool*. VI, 1914, esp. p. 94 ff.) Cf. also G. Ekholm, "De ribbade glasskålarnas ursprung," *Fornvännen*, 1958, 1-2, pp. 17-25.

10. Time of Ashurnasirpal: H. Frankfort, *The Art and Architecture of the Ancient Orient, Pelican History of Art*, 1955, Pl. 89. Time of Sargon: Montelius, *Vorkl. Chron.*, Fig. 404, b. Time of Ashurbanipal: *Cambridge Ancient History*, Pl. Vol. I, Cambridge, 1927, pp. 222-3, b. Cf. Luschey, p. 34 ff.

frequent, this is, to my knowledge, the first time that a glass omphalos bowl or "phiala" of such an early date has been found. The motif of the radiating ribs (lotus petals) – often sixteen in number – appears again and again throughout the 1st millennium B.C.[11]

Tumulus P is dated in the late 8th century.[12] The so-called Royal Tomb or "Big Tumulus," opened in 1957, which, incidentally, contained ninety-seven of these bronze omphalos bowls, is dated in the last quarter of the 8th century,[13] i.e. contemporary with, or slightly earlier than, Tumulus P or Tumulus Körte III.[14] Thus, we obtain a *terminus ante quem* for the glass bowl: about 700 or slightly earlier. It is curious to note that only one of all the Phrygian tombs excavated contained a glass object and that was the tomb of a child four or five years old.

The possibility of the glass bowl being of local manufacture should be considered. Most of the bronze vessels which have been found in Gordion were very probably local products. The faience bowls of Tumulus P, however, seem to have been imports from the East: Mesopotamia, Syria or Palestine.[15] As the glass bowl is a single find and as we do not know of any glass industry in the 1st millennium B.C. in Anatolia and, thirdly, as there are many indications of a rather lively glass production in Mesopotamia at the time, it seems safe to assume that our bowl was not of Anatolian origin.

The only well dated glass vessels of the time

FIG. 3. *Sargon Vase (No. 1, 2), from Nimrud. British Museum. (Photo courtesy Trustees of the British Museum.)*

of the Gordion bowl come from Nimrud.

2. Most important in this group is the often published *Sargon vase* of thick greenish glass in the *British Museum* (Fig. 3).[16] It is heavily corroded and strain cracks are visible. Interior and exterior have been ground. On the shoulder there is the engraved name of Sargon II (722-

11. Cf. a silver bowl with a Parthian coin, found at Ur, in the University of Pennsylvania Museum: 16-petalled rosette with radiating ribs. Cf. also a gray-ware black polished bowl from Gordion (No. 2658 P 875), 3rd cen., with 16 ribs radiating from an omphalos. The Gordion glass bowl as viewed from the top is similar to a bowl on one of the Lokri reliefs of the early 5th cen.: Luschey, *op. cit.*, p. 113. Line drawing in E. R. Goodenough, *Jewish Symbols in the Greco-Roman Period*, N. Y. 1956, V (Bollingen XXXVII), Fig. 103.

12. *A.J.A.*, 61, p. 330.

13. *Archaeology*, 10, Autumn 1957, p. 219. *A.J.A.*, 62, 1958, p. 148, note 17 and p. 154. For the dating of Phrygian tumuli cf. *Belleten*, XI, pp. 82-5.

14. Körte, *op. cit.*, p. 98 ff.

15. *A.J.A.*, 61, p. 328.

16. British Museum No. 90, 952. H. 3⅜" (8.5 cm), D. at handles 2⅜" (6.2 cm). A. H. Layard, *Discoveries in the Ruins of Nineveh and Babylon*, London, 1853, pp. 196-7. E. W. Wallis Budge, *British Museum. A Guide to the Babyl. and Assyr. Antiquities*, 3rd ed., London, 1922, p. 196. It has been suggested that the vase was cut out of a solid block of glass. A method more likely to have been used would have been to form vessels such as the Sargon vase and related objects in a mold and, after cooling, to grind them down. For the "cold-cutting" method cf. W. E. S. Turner, "Studies of Ancient Glass and Glassmaking Processes. Part II . . . ," *Journal of the Society of Glass Technology*, 38, 1954, p. 446 T. D. B. Harden, "Glass and Glazes" in: *A History of Technology*, ed. C. Singer et al., Oxford, 1956, II, pp. 321, 336. A photograph of the interior of the vessel, in R. J. Forbes, *Studies in Ancient Technology*, Leiden, 1957, V, p. 130, Fig. 22.

705) and two lions (indicating, perhaps, that it was the personal property of the king). Thus, it is the only glass object in the 1st millennium that can be dated through an inscription and, in addition, through archaeological context. It is the general consensus of opinion today to attribute the Sargon vase and similar finds to Assyria, probably because there is as yet no evidence of the production of glass vessels of the same kind anywhere else in the East at that time.[17] As most of the transparent glass vessels of the late 8th and 7th century have up to now been found at Nimrud it is reasonable to assume that glass was also made there.[18] However, a solution to this problem can only be given after more extensive excavation in other areas, especially Syria.

3-5. No attempt will be made to deal with the entire Nimrud group as it deserves a special study which would be of extreme importance to the history of pre-Roman glass. A few pieces, however, should be mentioned. Layard speaks of "two entire glass bowls, with fragments of others . . ."[19] Professor M. E. L. Mallowan very kindly drew our attention to *three* complete, or nearly complete, *hemispherical bowls* of rather thick and heavy greenish glass now preserved in the *British Museum*, which are "certainly Assyrian" (Fig. 4).[20] "I think we may take it as certain that these three vessels came from Nimrud, and I should imagine that their date is perhaps the last quarter of the 8th century or sometime in the 7th century B.C."[21] These bowls are likely the vessels listed by Layard.

17. Cf. esp. Fossing, *Glass Vessels*, p. 35.

18. A. Kisa, *Das Glas im Altertume*, Leipzig, 1908, I, pp. 102-4, thought of the Sargon vase as an Egyptian import.

19. *Op. cit.*, p. 196. In a note the diameters are given as 5″ and 4″ (ca. 12.5 and 10.0 cm), the heights as 2¾″ and 2¾″ (ca. 7.0 and 6.3 cm) respectively.

20. B.M. No. N. 818-91523; D. about 6″ (15.0 cm). N. 820-91534; D. 4¾″ (12.0 cm). N. 821-91521; D. 4″ (10.0 cm).

21. End of quote letter from M. E. L. Mallowan, Febr. 12, 1958.

FIG. 4. *Bowl (No. 1, 3), from Nimrud. British Museum (B.M. N.818-91523). (Photo courtesy Trustees of the British Museum.)*

Fragments of many more vessels of thick greenish glass have been found recently at Nimrud dating from the same period. One bowl may perhaps be attributed to a period "before 722 B.C."[22] The many ivories from Nimrud inlaid with glass supplement our scarce knowledge of the glass industry in the East during this time.[23]

6. Another glass object from Nimrud is also a *vase* in the *British Museum* (Fig. 5).[24] It is roughly spherical and of very thick green glass

22. Mallowan Letter. Cf. *J.S.G.T.*, 38, p. 447 T.

23. For recent literature on the glass finds at Nimrud cf. M. E. L. Mallowan, "The Excavations at Nimrud (Kalhu), 1949-50. Ivories from the N-W Palace," *Iraq*, XIV, part I, Spring 1954, p. 45 ff. *Idem*, *Iraq*, XVI, pp. 72-3. *Idem*, *I.L.N.*, December 7, 1957, pp. 970-1. Turner, *J.S.G.T.*, 38, p. 446 T ff. *Idem*, "Glass Fragments from Nimrud of the 8th to the 6th Century B.C.," *Iraq*, XVII, part I, 1955, p. 57 ff. *Idem*, "The Value of Modern Technical Methods in the Study of Ancient Glasses," *Atti del III Congr. Internaz. del Vetro, Venezia*, Rome, 1954, p. 706 ff. Some of the ivories inlaid with glass may be 9th cen.: Mallowan, *Iraq*, XIV, p. 47 ff. Cf. also the glass inlays from Samaria and Arslan Tash, 9th cen., which, however, seem to have been made in Syria. The question arises here whether these inlays were produced at different places in the Near East during the 1st third of the 1st millennium, or whether the center of manufacture shifted (from Syria to Mesopotamia?). Cf. J. W. and G. M. Crowfoot, *Early Ivories from Samaria*, London, 1938, p. 1 ff. F. Thureau-Dangin et al., *Arslan Tash*, Paris, 1931, p. 138, Pl. XLVII, No. 113-7.

24. B.M. No. 91461; H. 3″ (7.7 cm), D. at handles 3¾″ (9.5 cm).

FIG. 5. *Vase (No. 1, 6), from Nimrud. British Museum. (Photo courtesy Trustees of the British Museum.)*

with many small spherical bubbles. The green color is the result of the thickness of the glass. The surface is heavily corroded and grinding marks are obscured. The vessel has two handles, cut to form shields or prism-like motifs with two parallelograms sloping backwards, and with sharp frontal edges. The two shields are overlapped at the top by scroll-like motifs.

The handles of this vase are not unlike those of the Sargon vase and of one of the alabastra described in the following. Of this group of alabastra, which do not come from Nimrud but belong in the same category, two are in the British Museum and a third is in a private collection in Europe.

7. *Alabastron* in the *British Museum* (Fig. 6).[25] It is of thick transparent bluish-green glass which is slightly iridescent and has deep strain cracks and small spherical bubbles. Tool marks are not clearly visible but the object has definitely been ground. The two handles are almost identical with the ones on the globular vessel.

25. B.M. No. 69.6-24.16; given by Executors of F. Slade. Broken; H. about 8¼" (21.0 cm). Most probably found in Italy (Pozzuoli?). This information has been supplied by Mr. Harden after consultation with Mr. Higgins. The author should like to emphasize that the list of objects in the following is not meant to be complete.

8. Fragmentary *alabastron* in the *British Museum* (Fig. 6).[26] The thick green glass has the same appearance as the previous item. The surface is heavily pitted, strain cracks are not visible. The few bubbles seem to have been pulled around in a circumferential spiralling direction (this fact might be held against the theory that these pieces were cut out of blocks of glass). No tool marks could be detected but the surface was undoubtedly ground down.

9. Another similar *alabastron* is in a *Private Collection* (Fig. 7).[27] It is made of thick transparent greenish glass, shows strain cracks and heavy weathering.

10. Professor Mallowan also kindly drew our attention to a fragment of a hemispherical *rock-crystal bowl* now in the *Ashmolean Museum,*

26. B.M. No. 73.3-20.182; from Dali, Cyprus. Part of rim broken off; H. 3⅞" (9.8 cm).

27. H. about 9" (23.0 cm).

FIG. 6. *Two alabastra (No. 1, 7 and 8), from Italy (?) and Cyprus. British Museum. (Photo courtesy Trustees of the British Museum.)*

FIG. 7. *Alabastron (No. I, 9). Private Collection.*

Oxford, which was found in the debris on the floor of the throne room of the Burnt Palace at Nimrud (Fig. 8).[28] This bowl has an engraved, rather roughly executed lotus petal frieze and a groove around the rim. Its date, according to Professor Mallowan, is about 700-650 B.C. The shape resembles closely some of the glass bowls from Nimrud and the blue bowl of the Bernardini Tomb (p. 32). The decoration, incidentally, reappears centuries later on a certain type of Hellenistic glass bowl; a fragment of such a bowl was found at Gordion (p. 38). The rock crystal vessel might be taken as an indication that at a certain period in Mesopotamia both glassmakers and rock crystal carvers were closely associated, both producing vessels of similar form and decoration.

The rich finds from Nimrud and the specimens closely related to them suggest a relative-

28. No. 1952.57. Reconstructed H. 2¾" (5.5 cm); D. 2¾" (7.0 cm).

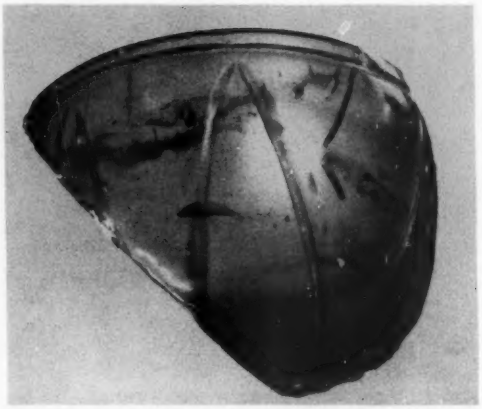

FIG. 8. *Fragment of a rock crystal bowl (No. I, 10), from Nimrud. Oxford. (Photo courtesy Ashmolean Museum.)*

ly thriving glass industry in this area in the 8th and 7th centuries.[29] The Gordion bowl was very probably made there in one of the glass houses or, more likely, in the "royal" factory. It is true that no glass bowl identical to the Gordion piece has been found at Nimrud proper; it is also true that the quality of the glass and the cutting are slightly different from, and probably superior to, the Nimrud finds, which themselves vary in quality. These factors, however, do not seem to warrant a rejection of this attribution.

Two bronze *situlae* from the Royal Tomb at Gordion emphasize again the relation between Assyria and the Phrygian capital.[30] They were found with bronzes and wooden furniture of the same type as found in Tumulus P and are very similar to vessels carried during a procession depicted on reliefs in Sargon II's palace at Khorsabad.[31]

In emphasizing Assyrian exports one might,

29. Cf. *Iraq,* XVI, p. 73.

30. Young, *Archaeology,* 11, Winter 1958, p. 228 ff.; *A.J.A.,* 62, 1958, p. 152; *Expedition* I, No. 1, Fall 1958, p. 12.

31. Ch. K. Wilkinson, "Two Ancient Silver Vessels," *Bull. Metrop. Mus. of Art,* XV, Summer 1956, p. 12. *Archaeology,* 11, Winter 1958, p. 231.

finally, also draw attention to the glass bowl from the Bernardini tomb (p. 32) which was certainly of Eastern origin and which was found in a silver bowl having a 25-petalled rosette at the center, a motif similar to the one on the Gordion bowl.[32]

There are two known texts predating the Roman Empire which contain remarks on the composition and ingredients of glass. The first is a middle-Babylonian text on glaze making,[33] the other is an Assyrian text on glaze and glass-making from the library established by Ashurbanipal at Nineveh (669-626?). This latter text was edited by R. C. Thompson.[34]

It is curiously coincident that the mid-7th century text is the only one known dealing with glass and that it was written at a time when the Assyrian glass industry seems to have been at its peak. However, it should be stated that the recipes might reflect an earlier text.[35] Its existence again seems to confirm the belief that during the late 8th and the 7th centuries, an important glass industry in Mesopotamia was turning out a "line" of vessels, ornaments, inlays and beads, probably with special emphasis on pale greenish and crystal clear glass. The variety and quality of this production would imply a high degree of technical competence.

It would be ideal if the recipes in the text could be matched with some analyses of the 8th-7th century glass thought to have been made in Mesopotamia. Unfortunately, these recipes cannot be interpreted in sufficient detail to permit the tabulation of one or more glass composition schemata. Even if interpreted correctly they are too general to be used as parallels or recipes for the Nimrud glass or the Gordion bowl.

There follow a few vessels of transparent greenish and bluish glass which seem to fall in the same class as the Gordion, the Nimrud and the Nimrud-type pieces. Their places of origin and their dates are often unknown.[36]

11. Hemispherical *bowl*, from *Fortetsa-Knossos*, before 630 (Fig. 9).[37] The glass is transparent and pale green.

12. Hemispherical *bowl*, from the *Tomba Bernardini* at Palestrina (Praeneste), probably

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32. Cf. also 7th cen. ceramic plates from Rhodes and from Kamiros with similar motifs: K. F. Kinch, *Vroulia*, Berlin, 1914, col. 221-2.

33. C. J. Gadd and R. Campbell Thompson, "A Middle-Babylonian Chemical Text," *Iraq*, III, part I, 1936, pp. 87-96. Cf. also H. Moore, "Reproductions of an Ancient Babylonian Glaze," *Iraq*, X, part I, 1948, pp. 26-33.

34. R. Campbell Thompson, *On the Chemistry of the Ancient Assyrians*, Luzac & Co., London, 1925, lim. ed.; cf. later corrections in Thompson's *A Dictionary of Ancient Assyrian Chemistry and Geology*, Oxford, 1936, especially p. XXIII ff. Cf. also W. E. S. Turner, "Studies in Ancient Glass . . . Part III. The Chronology of Glass Making Constituents," *J.S.G.T.*, XL, 1956, p. 42 T. Forbes, *op. cit.*, pp. 135-40, gives again the English transcription of the text.

35. A. E. Marshall, "An Assyrian Text on Glass Manufacture," *J. of Chem. Educ.*, 10, 1933, p. 268.

36. The earliest finds of clear glass – vessels and inlays—occur during the 18th Dynasty: A. Lucas, *Ancient Egyptian Materials and Industries*, 3rd ed., London, 1948, p. 219. Mr. Smith drew our attention to a fragment of clear glass [from a vessel] found at the Palace of Amenhotep III at Thebes, now at the Metrop. Mus. The first non-Egyptian vessel of transparent glass is represented by fragments of a blue lobed glass bowl of the 13th cen. B.C., found at Kakovatos: K. Müller, "Alt-Pylos. II. Die Funde aus den Kuppelgräbern von Kakovatos," *A.M.*, XXXIV, 1909, pp. 296-7, Fig. 13. Fossing, *Glass Vessels*, p. 26; Fig. 15. Estim. D. about 6¼" (16.0 cm). The bowl was "molded" (?) and cut (?); Harden, *op. cit.*, note 52 believes that it was "cold-cut." Cf. also the pressed glass ornaments of Mycenaean and Cretan origin many hundreds of which are now on display in the Nat. Museum, Athens. Interesting for the history of glass making in Greece are also the inlays of clear glass which have been found at Olympia and were probably meant to be used for the gold-ivory statue of Zeus: E. Kunze, "Die Ausgrabungen in Olympia in Winter 1954/5," *Gnomon*, 27, 1955, pp. 223; "Die Ausgrabungen . . . 1956," *Gnomon*, 28, 1956, pp. 318-9: 30's of the 5th cen. There is also a rather large group of so-called Astarte figurines, probably usually made of bluish glass which seem to be late Bronze Age. Cf. Harden, *op. cit.*, Fig. 296. *Glass from the Ancient World. The Ray Winfield Smith Collection*, Special Exhib. in The Corning Museum of Glass, Corning, 1957, No. 25, with ref.

37. Museum at Herakleion, No. 1567; H. 3⅛" (7.8 cm). D. 5⅛" (13.3 cm). Excavated by H. G. G. Payne and A. A. Blakeway. J. K. Brock, *Fortetsa. Early Greek Tombs Near Knossos*, Cambridge, 1957, p. 134, Pl. 112; for the date cf. p. 214. Fossing, *op. cit.*, p. 36, Fig. 23. According to Mr. Harden the bowl is slightly asymmetrical, i.e. the base point is not at the center.

FIG. 9. *Bowl (No. I, 11), from Fortetsa-Knossos. Herakleion.*

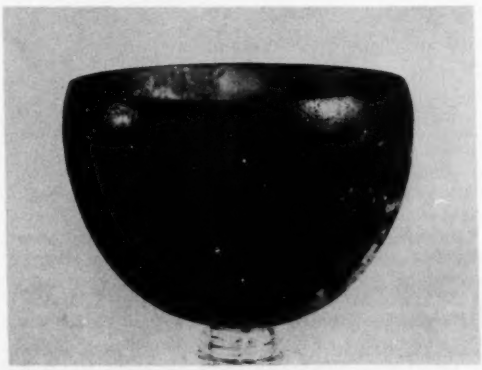

FIG. 10. *Bowl (No. I, 12), from the Tomba Bernardini. Rome.*

FIG. 11. *Bowl (No. I, 13), British Museum. (Photo courtesy Trustees of the British Museum.)*

1st half of the 7th century (Fig. 10).[38] It is of "sea" blue glass[39] and heavily iridescent. The provenance is assumed to be "East."[40]

13. Shallow *bowl* in the *British Museum* (Fig. 11).[41] The clear thick glass has a yellowish-green tinge, few bubbles and strain cracks. The bowl has a flaring rim. On the exterior there is a raised leaf rosette with sixteen petals, every other petal having a medial groove framed by two other grooves. These eight petals are in lower relief than the other eight which lack the grooves. The petals start below the rim at a groove. The whole surface was cut and ground after the forming process. On the interior there is a deep oval cut which looks as if the engraver, holding the bowl against the rotating wheel to grind the surface, had forgotten momentarily to continue the motion of the object over the wheel. This bowl is in appearance very close to the Gordion bowl: size and glass material are similar, as well as decoration and the manufacturing technique. It is, therefore, possible to consider a date rather close to the Gordion bowl although it is admitted that a later date is conceivable: possibly Mesopotamia, 7th century or perhaps later.

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38. Rome, Museo Preistorico e Etnografico L. Pigorini. H. $2\frac{11}{16}$" (7.5 cm), D. about 4" (10.0 cm). C. D. Curtis, *The Bernardini Tomb, Memoirs of the Americ. Acad. in Rome,* 1919, No. 60, Pl. 43, 1. Fossing, *op. cit.*, pp. 36-7.

39. Curtis, *op. cit.*, p. 57. Dott. Antonia Ciasca kindly confirmed this description.

40. There is a close relation between the ivory fragments found in the Bernardini tomb, Curtis, *op. cit.*, Pl. 35, Fig. 13-14, and the ivories from Nimrud: H. Frankfort, *The Art and Architecture of the Ancient Orient, Pelican History of Art,* Baltimore, 1955, Pl. 170, a, p. 191 ff., and for the most recent finds, Mallowan, *I.L.N.*, December 7, 1957, p. 971, Fig. 13 and 14. These ivories represent, among other subjects, griffins with wings inlaid with glass. The ivories as well as the petal motif on the silver bowl and the blue glass bowl seem to support the assumption that the East (Assyria?) was the origin for many of the Bernardini objects.

41. B.M. No. 70.6-6.7; Slade bequest. H. $1\frac{5}{8}$" (4.2 cm), D. $6\frac{3}{4}$" (17.2 cm). It might be the piece mentioned in A. Nesbitt, *Cat. of the Coll. of Glass Formed by Felix Slade . . .*, London, 1871, No. 203, p. 34, though the dimensions are not the same.

14. *Vase* in *The Corning Museum of Glass* (Fig. 12).[42] The color of the glass is, because of its extreme thickness, greenish. The spherical upper part with handles in which holes have been drilled, rests on a strongly profiled thick stem and flaring foot. The surface shows grinding marks. Such an object might very well have been made in the "lost wax" process. The shape is related to a dinos type of the 2nd quarter of the 1st millennium.[43] The provenance is the Near East, possibly Mesopotamia, the date possibly 7th-6th century.

15. A rather close parallel to this piece (though much smaller) is a *vase* in the *Villa Giulia* from Praeneste (?) and found in an "Etruscan level" (Fig. 13).[44] It is of heavily weathered thick greenish glass and has holes drilled into the sides and into the rim (for mounting ?).

16. A fragmented *jug* of thick greenish glass comes from the *Aliseda Treasure* and is now in Madrid (Fig. 14).[45] There is a pseudo-hieroglyphic inscription on the shoulder which might help to date the vase.[46] Metal and ceram-

FIG. 12. *Vase (No. I, 14). Corning.*

FIG. 13. *Vase (No. I, 15), from Praeneste (?). Rome.*

42. No. 55.1.66; H. 7½" (19.2 cm). *Glass from the Ancient World*, No. 48. Cf. a mimeographed note on this and the following pieces by Mr. Smith, with additional information provided by Mr. Harden; a copy of this note is preserved in The Corning Museum of Glass.

43. O. Montelius, *Vorkl. Chron.*, Pl. LIX, No. 16-7. Kinch, *op. cit.*, Pl. 15.

44. Rome, Villa Giulia. Formerly Barberini Collection(?). According to Mr. Smith this piece has clearly visible mold marks.

45. Madrid, Museo Arqueologico. 5¾" (15.0 cm). J. R. Melida, *Tesoro di Aliseda*, Madrid, 1921, No. 24, pp. 30-2. *Idem*, "Der Schatz von Aliseda," *Jb. d. Dt. Arch. Inst., Arch. Anz.* 43, 1928, cols. 507-9; Fig. 7. Fossing, p. 104, n. 2. A. Blanco Freijeiro, "Orientala. Estudio de Objetos Fenicios y Orientalizantes en la Peninsula," *Archivo Español de Arqueologia*, XXIX, 1956, p. 4 ff., Figs. 1-6, 9-14.

46. A rock crystal alabastron in the Louvre bears hieroglyphs of a Pharaoh; his name might be one of a 4th cen. B.C. ruler. Cf. A. Deville, *Histoire de l'Art de la Verrerie*, Paris, 1873, pp. 9-10, Pl. IV, B. A. Kisa, *op. cit.*, p. 293; Fig. 53. Melida, *A.A.*, col. 508, refers to (imported ?) objects with pseudo-Egyptian inscriptions from Nimrud. Cf. also Blanco Freijeiro, *op. cit.*

FIG. 14. *Jug (No. I, 16), from the Aliseda Treasure. Madrid.*

ic parallels, however, will probably provide the safest means of placing the piece in its proper context.[47] A. Blanco Freijeiro suggests a 7th century B.C. date and probably the Eastern Mediterranean as provenance.

17. Very similar to the Aliseda vase is a handled *vase or amphora* from a tomb at the *Giardino Margherita*, now at the *Museo Civico, Bologna*.[48] It is of thick greenish glass. The *terminus ante quem* is about 520 B.C. A 7th century date may be suggested in view of the suggested date of the Aliseda vase.

18. An exact parallel to the metal bowls of the 9th-7th century is a glass *bowl* found at *Babylon*, dated in the 6th century (?).[49] The very shallow curved vessel has a flaring rim and is apparently of almost clear greenish glass. The surface of the bowl might have been ground down.[50]

This concludes the group of vessels of thick usually greenish glass which might be regarded as companion pieces of the omphalos bowl from Gordion.

GROUP II

The second group of glasses of great importance from Gordion consists of several fragments of transparent, heavily cut glass vessels found at Hellenistic levels. There is reason to believe that these vessels are indirectly based on traditions deriving from the Assyrian glass industry and their Persian (?) successors. Glass of the type found at Gordion has never been

47. Montelius, *Civ. prim.*, II, Pl. vol. 2, Pl. 253 ff., cf. esp. Pl. 336, No. 12 a. *Idem, Vorkl. Chron.*, Pl. LVI, No. 2a. A. Garcia y Bellido, "Materiales de Arqueologia Hispano-Punica. Jarros de Bronce," *Arch. Esp.*, XXIX, 1956, pp. 85-104.

48. H. 8⅝" [22.0 cm]. E. Brizio's report in: *Notizie degli Scavi*, 1887, pp. 341-2. P. Ducati, *I Tempi Antichi*, in: *Storia di Bologna*, I, Bologna, 1928, p. 205. C. Albizzati and A. Stenico, "Osservazioni su Oggetti del VII Secolo a. C. Trovati nell'Italia Centrale," *Acme*, V, 1952, p. 601 ff.; Fig. 2. Blanco Freijeiro, *op. cit.*, Fig. 15.

49. Present whereabouts unknown. H. 1⅝" (4.0 cm), D. 6" (15.2 cm), thickness $\frac{1}{16}$"-⅜" (0.2-0.4 cm). O. Reuther, *Die Innenstadt von Babylon (Merkes)*, 47th Wissenschaftl. Veröff. d. Dt. Orientges., Leipzig, 1926, pp. 209-11; Fig. 107, b.; Pl. 65, No. 109: grave 109—a child's grave. No. of object: 35612. "Neubabylonische Schicht . . . Nach der Art einiger Beigaben gehört das Grab in die persische Zeit." Fossing, *Glass Vessels*, pp. 45-6, 84-5. The question arises here, incidentally, as to the possible significance of these exceptional glass bowls having been found in children's graves: The mesomphalic Gordion bowl, the one from Babylon, and one fragment of a globular vessel from a child's grave from Thera, 7th century. For the latter cf. E. Pfuhl, "Der archaische Friedhof am Stadtberge von Thera," *A.M.*, 1903, p. 238: grave 113. Cf. Fossing, *Glass Vessels*, p. 37.

50. There were two other exceptional glass finds in this grave. Both seem to have no direct parallels. One is a jar of (opaque?) white glass with inlaid "eyes," probably core-made. The other is the rim and neck section of a *balsamarium* of "thin transparent dark blue glass." The three bowls of thin greenish or brownish transparent glass with ribs on their exteriors which were published by v. Sacken, *Grabfeld*, p. 109, Pl. XXVI, Fig. 9, may also belong to Group I. For a recent study of the Hallstatt vessels cf. T. E. Haevernick "Hallstatt-Tassen," *Jb. d. Röm.-Germ. Zentralmus. Mainz*, 5, 1958, pp. 8-17.

thoroughly studied. It is hoped, therefore, that by publishing these finds attention will be drawn to this very important aspect of glass-making.

1. *Three joining fragments of a beaker* [?] *from Gordion, City Mound* (Fig. 15).[51] The al-

FIG. 15. *Hellenistic fragment (No. II, 1), from Gordion.*

most clear glass has a slight green tinge in cross section.[52] The vessel had a flaring rim and walls tapering downwards possibly to spread again at the bottom. The rim section is plain and ground. Below the rim there is a raised band which bears a row of almond-shaped bosses in relief, pointing downwards and connected by two finely engraved horizontal lines and intersecting arches.[53] Underneath the raised band (H. 3/16" [2.1 cm.]), there are at least 12 grooves running around the vessel (the cut decoration is 1/4" [0.6 cm.] deep at its maximum depth).

The first of these fragments was found in 1951 in a Hellenistic level,[54] to be dated in the 3rd century. In 1957 two more fragments were found at very short intervals in a Hellenistic level at a point about 50 yards away from the spot where the first one was found. The 1957 level, "No. 3," can be dated before 250 B.C.

The original vessel appears to have been similar in shape to a (late?) Hellenistic glass beaker in the British Museum from Aegina (p. 43), which has a rounded lower body with high flaring neck and rim. Metal vessels of this shape, however, already existed in pre-Hellenistic times.[55] The horizontal grooves covering the vessel remind one of earlier Persian silver *rhyta* or pouring vessels[56] and silver bowls.[57] The closest parallels in glass seem to be a few fragments found at Persepolis for which the *terminus ante* is 330 B.C. They bear vertical or diagonal grooving.[58]

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51. No. 1595 G 81. Estim. D. of rim, about 3½" (9.0 cm).

52. For technique of manufacture cf. the description of the omphalos bowl. Most of the Gordion finds and the related specimens to be mentioned in the following were probably made in the lost wax process and then finished by cutting and polishing.

53. A very similar motif appears on a silver bowl with concave rim from Gezer: R. A. Stewart Macalister, *The Excavation of Gezer*, London, 1912, I; p. 292; Figs. 154, 4 and 156. The silver bowl has bosses with finely engraved lotus petals forming arches; they are connected by three horizontal lines. For Gezer chronology cf. W. F. Albright, *The Archaeology of Palestine*, London, 1956, p. 31.

54. Level I b 1–II; for levels cf. *A.J.A.*, 60, pp. 249-50.

55. Ceramic bowl from Nimrud; J. Lines, "Ivories from Nimrud," *B.M.M.A.*, XIII, April 1955, p. 241. Cf. also the representation of a metal beaker flaring to a wide rim and with rounded base on a large gold bowl found recently at Hassanlou, North-West Persia, *I.L.N.*, September 27, 1958, p. 509.

56. Ch. K. Wilkinson, "Two Ancient Silver Vessels," *B.M.M.A.*, XV, Summer 1956, pp. 9-15: from N.W. Iran, now in The Metropolitan Museum of Art and the University of Pennsylvania Museum. Cf. also A. U. Pope, *A Survey of Persian Art*, Oxford, New York, 1938, IV, Pl. 114; cf. also Pl. 117, C and D. An Achaemenian gold rhyton in Teheran was published in *I.L.N.*, July 21, 1956, p. 107.

57. E. F. Schmidt, *Persepolis*, Chicago, 1953, I (O.I.P. 68), Pl. 41; 1957, II (O.I.P. 69), Pl. 70.

58. Schmidt, *op. cit.*, 1957, Pl. 67, No. 10, 11; p. 127, Fig. 27. The *terminus ante quem* is 330 B.C. No. 11 may have come from a vessel very similar in shape to the reconstructed Gordion piece. The fragment of the base of a bowl, Pl. 66, No. 2, (Pl. 67, No. 5) seems very similar to a fragment formerly in the Schiller Collection: R. Zahn, *Sammlung Baurat Schiller*, Auction at Lepke's, Berlin, 1929, No. 357, Pl. 15. According to Zahn it is the handle of an oval plate of the 3rd cen. A.D., a date which seems rather late.

FIG. 16. *Hellenistic fragment (No. II, 2), from Gordion.*

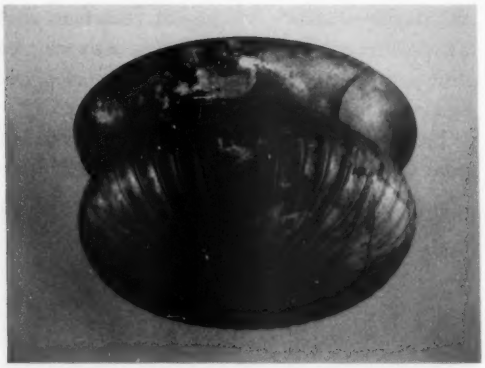

FIG. 17. *Bowl (No. II, 4). Collection R. W. Smith.*

FIG. 18. *Bowl (No. II, 6). Toronto.*

Qualitatively the Gordion as well as the Persepolis fragments are superior to any other pre-Hellenistic and Hellenistic cut glass known to the author. They must have been made at a factory specializing in luxury ware of the first order.

2. *Fragment of a bowl, Gordion, City Mound* (Fig. 16).[59] The glass material, the decomposition – a smooth whitish-ochre layer – and the cutting technique are very similar to the previous item. It was also found near the place where the first fragment of No. 1 was found. It probably stems from the shoulder region of a bowl similar to one in the Smith Collection (4) and had possibly a base similar to the following fragment (3). On the exterior there remains the upper termination of a petal frieze in relief (parts of three petals are preserved). Although this fragment could be inverted and thereby warrant a different reconstruction of the vessel from which it came, the first assumption seems more likely.[60] Above the petals there is a groove; in the spaces between the upper petals triangular pyramid-like elevations are cut out of the glass. The archaeological stratification again suggests a mid-3rd century or slightly earlier date. The quality of the cutting is equal to the workmanship of Fragment 1.

3. *Fragment from a bowl, Gordion, City Mound,* Hellenistic pit.[61] The clear glass has a slight green tinge and is weathered and pitted. The fragment was part of the bottom of a bowl probably similar to ceramic Megarian bowls. At the base there is a central raised disk surrounded by two fairly broad concentric grooves (D. disk ¾" [1.9 cm.]) which form a

59. No. 1596 G 82.

60. Cf. F. Courby, *Les Vases Grecs à Reliefs*, Paris, 1922, Pl. XII ff.

61. No. 504 G 33. Unstratified. Now in Ankara, Arch. Museum. The D. at rim may have been 4"-5" (10.0-13.0 cm). Not illustrated.

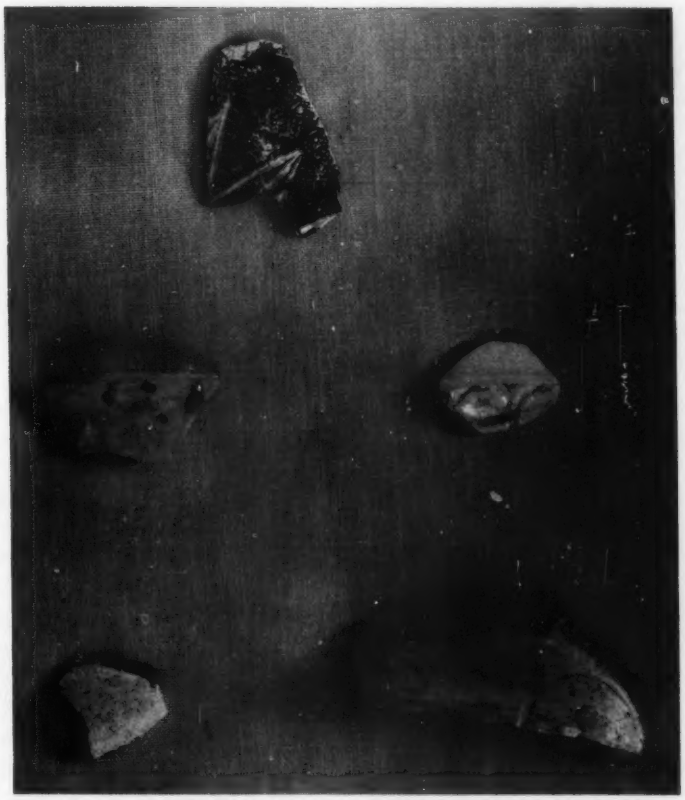

FIG. 19. *Group of Hellenistic fragments from Gordion. (No. 11, 2, middle right; 7, lower left; 8, lower right; 9, top center; 22, middle left.)*

sort of double step. Narrow flutes radiate from the outer ring.

4-6. The bowls to which fragments 2 and 3 belonged could be reconstructed to resemble a bowl (4) like the one in the *Smith Collection* (Fig. 17),[62] to which *two others* at the *Metropolitan Museum* (5), and the *Royal Ontario Museum* (6) are related (Fig. 18).[63] All of these bowls have flute-rosettes radiating from a circlet at the base and grooves above the petals along the shoulder. The Gordion fragment 2 should be compared with the petal terminations on the Smith bowl. Furthermore, the decomposition on the Smith bowl is very similar to the weathering on the Gordion fragments 1 and 2. Glass bowls of this type were again undoubtedly copied from metal bowls[64] frequently associated with Alexandria, although they

62. RWS No. 659. H. 2⅝" (6.8 cm), D. 5⅜" (13.8 cm). *Glass from the Ancient World*, No. 53.

63. Metropolitan Museum: W. Froehner, *Collection Julien Gréau*, Paris, 1903, III, Pl. CLXXXII, No. 6, from Cyprus. Toronto, Royal Ontario Museum: No. 918,21,15. Cf. also a bowl of bluish-green glass in Toledo (354.732) with narrow flutes radiating from three concentric grooves enclosing a six pointed star.

64. Silver bowl from the Toukh el Qarmous treasure: Rostovtzeff, *op. cit.*, I, p. 390, Pl. XLVII, 4. Early 3rd cen.: *ibid.*, p. 374. Silver bowls from Radyuvene, 4th-3rd cen.: *Cambridge Ancient History*, Pl. Vol. III, Cambridge, 1930, pp. 70-1, b. A silver bowl from Cyprus has two rows of flutes, with a *kymathion* around the concave rim; late 5th-4th cen.: E. Gjerstad et al., *The Swedish Cyprus Expedition*, Stockholm, 1937, III, pp. 238, 274; Pl. XC, XCII, No. 292, c; from Vouni.

should also be compared with ceramic Megarian bowls with long petals which have been found among other places, at the Athenian Agora.[65]

As the metal as well as the ceramic Megarian bowls with petalled decoration seem to be closely connected with the Egyptian (Alexandrian) industry, it is reasonable to assume the glass bowls of this type may also have been made in Alexandria.[66] It should be admitted, however, that this would not exclude the possibility of other factories turning out similar vessels at centers more or less bordering the Mediterranean.[67]

Closely related to fragments 2 and 3 and their parallels are three more fragments (7-9) from bowls or beakers also found at Gordion.

7. *Fragment of a bowl or beaker, Gordion, City Mound* (Fig. 19).[68] The clear glass has a yellow tinge and is heavily weathered. The fragment seems to represent the lower part of a highly raised "lotus" petal or bud;[69] two incised lines run parallel to the lower edges of the bud.

8. *Fragment of a bowl, Gordion, City Mound,* Hellenistic level (about 250-189 B.C.) (Fig. 19).[70] The clear bubbly thick glass has a yellowish-green tinge (cleaned). The fragment represents a section of the bottom of a bowl. There is a circlet at the base from which groups of three lines or grooves alternating with raised almond-shaped protrusions radiate. Both of these motifs were apparently repeated six times.

9. *Fragment of a bowl, Gordion, City Mound,* Hellenistic level (about 250-189 B.C.) (Fig. 19).[71] This fragment is of light amber glass and probably stems from a hemispherical bowl. Sections of three leaves with medial grooves – in shallow engraving – have been preserved.

The decoration on fragments 7, 8 and 9 was cut, at least in part. The protrusions on 7 and 8 might have been formed during the manufacturing process. The date for fragment 7 is very probably the 3rd century.

The three fragments represent two other subgroups in the category of Hellenistic cut glass. Metal vessels again served as prototypes.[72] They are closely related to a small group of "finned" bowls, as well as to the more common, usually hemispherical, Megarian-type bowls which have lotus leaves and parallel grooves, and not flutes, cut into their surfaces.

Of the small group of "finned" bowls, each bears a slightly different petal pattern and each has fin-like protrusions around the shoulder region. They are mostly of clear glass with a green tinge. Their diameters vary generally between 6″ and 8″ (about 15.0 - 20.0 cm.). They have shallow or almost hemispherical bodies and often flaring rims.

10. *Bowl in a private collection* (Fig. 20).[73] At the bottom there are three concentric rings. Six petals with medial grooves, alternating with groups of three parallel grooves, radiate from the rings. Twelve highly raised fins emerge at the shoulder region. Two more

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65. The *terminus post quem* for the Megarian bowls in Athens has been assigned to about 275, and specifically for the long petalled type, to about the middle of the 2nd cen.: H. Thompson, "Two centuries of Hellenistic pottery," *Hesperia,* III, No. 4, 1934, D. 39; p. 457 ff. Cf. parallels from Delos: Courby, *op. cit.,* Pl. XV, e. The longevity of the fluted-bowl type is attested by the existence of Roman bowls: cf. for instance G. Ekholm, "Orientalische Gläser in Skandinavien," *Acta Archaeologica,* XXVII, 1956, p. 55, Fig. 11.

66. For Rostovtzeff's views on Alexandrian glass cf. *op. cit.,* I, p. 371; but: p. 376.

67. For a recent view on the Alexandrian origin of Megarian bowls cf. K. Parlasca, "Das Verhältnis der megarischen Becher zum Alexandrinischen Kunsthandwerk," *Jb. d. Dt. Arch. Inst.,* 70, 1955, pp. 129-54.

68. No. 2758 G 147. Unstratified.

69. H. of protrusion ¼″ (0.6 cm); overall thickness, ⅜″ (0.9 cm).

70. No. 3779 G 201.

71. No. 3142 G 170.

72. Cf. for instance G. A. Eisen and F. Kouchakji, *Glass,* New York, 1927, I, Pl. 39. For the following cf. esp. Fossing, *Berytus,* IV, and Luschey, *op. cit.*

73. D. rim about 6⅝″ (17.0 cm).

FIG. 20. *Bowl (No. II, 10). Private Collection.*

FIG. 21. *Bowl (No. II, 11). Private Collection.*

grooves are cut along the rim section.

11. *Bowl in a private collection* (Fig. 21).[74] A six-pointed star at the bottom is enclosed in a circlet from which radiates a rosette with twelve petals having medial grooves. The twelve shoulder fins are softer in contour and less raised than on the previous item. Again there are two grooves around the rim.

12. *Bowl in the British Museum,* said to have come from *Canosa* (Fig. 22, 23).[75] The design is more complicated than on the previous vessels: there is a rosette at the base from which petals radiate. On a second level there are six round petals or leaves overlapping and alternating with six pointed petals running parallel to the rim.[76] Above these are twenty highly raised fins between grooved bands.

13. *A fragment of a "finned" bowl or beaker of opaque red glass in the R. W. Smith Collec-*

FIG. 22. *Bowl (No. II, 12), from Canosa (?). British Museum. (Photo courtesy Trustees of the British Museum.)*

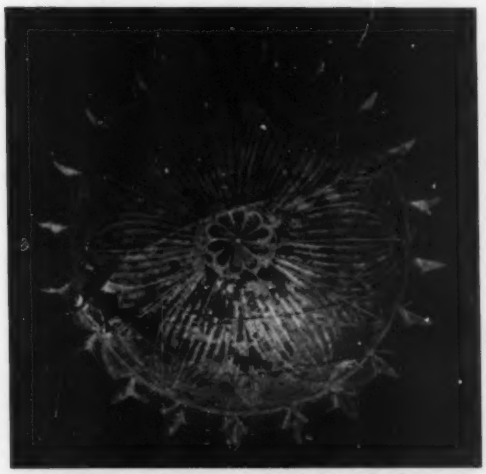

FIG. 23. *Bowl (No. II, 12). Underside.*

74. D. rim about 6¼" (16.0 cm).

75. British Museum No. 71.5-18.7. H. 3½" (9.0 cm), D. 8⅛" (20.5 cm). Bought in 1871 from a dealer; the author acknowledges his indebtedness to R. A. Higgins for this information. Deonna, *R.E.A.*, 1925, Fig. 4 (for full ref. see n. 111). Deonna apparently thought this bowl to be one of the Canosa gold glass bowls. W. A. Thorpe, "The Prelude to European Cut Glass," *J.S.G.T.*, 22, 1938, Fig. 5, pp. 23-4. A large and similar bowl recovered from the sea at Antikythera has been brought to the author's attention by Mrs. Weinberg. Cf. also G. R. Davidson, *Corinth*, XII, Princeton, 1952, pp. 77, n. 3.

76. For this pattern cf. esp. Rostovtzeff, *op. cit.*, I, Pl. XLVII, No. 4. Cf., furthermore, the design on the 3rd cen. goldglass bowls

FIG. 24. *Fragment (No. II, 13). Collection of R. W. Smith.*

tion indicates that this bowl type was not confined to transparent glass (Fig. 24).[77] The fragment seems to have been part of the shoulder region of a bowl having a rosette of petals with medial grooves. The upper parts of the petals alternate with raised countersunk ovals. This fragment could also be compared with the beaker from Aegina in the British Museum (23), the lower region of which is similarly decorated.

Megarian-type glass bowls with petal and groove patterns seem to be as frequent as the fluted hemispherical mentioned above. Both types are closely related. The three following examples – each representing a variation – are also certainly Hellenistic.

14. *Bowl in the Jerome Strauss Collection.*[78] It is of transparent amber glass with a six-pointed star at the base enclosed by concentric grooves. On the sides four multiple grooved

77. *Glass from the Ancient World*, No. 180.

78. H. 3⅜″ (8.5 cm), D. 5½″ (14.0 cm). *Glass Drinking Vessels from the Strauss Collections*, Corning, 1955, No. 41 (ill.).

FIG. 25. *Bowl (No. II, 15). St. Louis. (Photo courtesy of the City Art Museum, St. Louis.)*

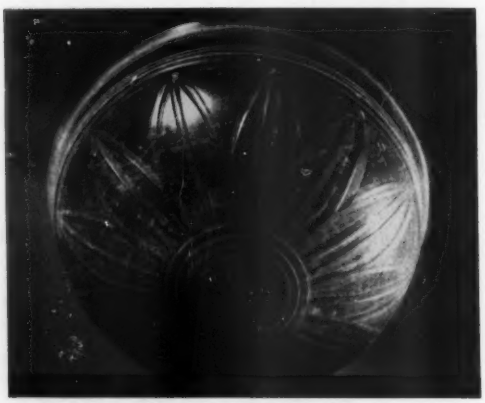

FIG. 26. *Bowl (No. II, 16). Vatican.*

petals alternate with four groups of parallel grooves (each group in turn having alternatingly five and six grooves).

15. *Bowl of amber glass in the City Art Museum at St. Louis* (Fig. 25).[79] It has four grooved petals alternating with groups of parallel grooves, both radiating from an eight-pointed star.

16. *Bowl in the Vatican*, Museo Etrusco

79. No. 288: 23. H. 3½″ (8.9 cm), D. rim 5¾″ (14.6 cm). The author is grateful to R. J. Charleston for bringing this bowl to his attention. Included in the glass finds from Antikythera was also a large hemispherical bowl with horizontally oriented leaf branches. A color slide of this bowl was kindly given by Mrs. Weinberg to the Corning Museum.

(Fig. 26). Twelve petals radiate from an eight-pointed star enclosed in rings.

Here follows another group of shallower bowls to which the Gordion finds are not directly related. They all have elaborate cut petal patterns. In view of the date of the Ephesus bowl described below they seem to be pre-Hellenistic although the possibility of a later date for some of them should not be excluded. As they imitated Achaemenid metal bowls, it might very well be that at least some of these pieces are the product of a glass industry possibly located in Western Persia, an area that has been associated herein with the Assyrian glass industry of the 8th and 7th centuries. The Persepolis finds and the probable relation of the grooved Gordion fragment 1 to Achaemenid silver vessels also point towards such a source of manufacture.[80]

FIG. 27. *Bowl (No. II, 17), from Ephesus. British Museum. (Photo courtesy Trustees of the British Museum.)*

17. *Fragmentary bowl, from Ephesus,* Artemis Temple, probably before 350 B.C., now in the *British Museum* (Fig. 27).[81] It is of clear glass with greenish-yellow tinge. The surface is heavily weathered; no bubbles are detectable. The glass material is similar to Gordion fragments 1 and 2 and the bowl in the Smith Collection. The cut decoration consists of a rosette of 18 pointed petals with medial ridges. The spaces between the upper terminations are filled with 18 small almond-shaped motifs.[82]

FIG. 28. *Bowl (No. II, 18). Corning.*

18. *Bowl in The Corning Museum of Glass* (Fig. 28).[83] The transparent thin light blue bubbly glass is heavily corroded. The shallow bowl has a flaring rim with extremely thin edge. The decoration includes a rosette with 16 pointed petals having alternatingly medial ridges and grooves. In view of the Ephesus bowl, a 4th century date might be suggested.

19-20. *Two bowls, formerly in the Antiquarium, Berlin.*[84] The first bowl (No. 2125)

80. The only literary evidence for the use of glass vessels in the period we are concerned with can be found in Aristophanes' *Acharnians* (425 B.C.): Greek ambassadors to the Persian court drank from goblets (ekpomata) of glass and gold; cited after Trowbridge, *op. cit.*, pp. 134, 151.

81. B. M. No. 1907.12-1.542. H. 2¼″ (5.7 cm), est. D. rim, about 6″ (15.2 cm). Fossing: est. D. 16.7 cm. D. G. Hogarth, *Excavations at Ephesus,* London, 1908, p. 318. Fossing, *Glass Vessels,* pp. 49, 83-4. *Idem, Berytus,* IV, p. 121 ff. Rostovtzeff, *op. cit.*, I. p. 539. For type cf. also Luschey, *op. cit.*, p. 125 ff.

82. For metal prototypes see Fossing, *Berytus,* esp. p. 122.

83. Acc. No. 55.1.138. H. about 1½″ (3.8 cm), D. about 5¼″ (13.3 cm). *Glass from the Ancient World,* No. 52. Heavily restored.

84. No. Glas Inv. 2125 and 2126. No. 2125: H. about 1⅝″ (4.1 cm), D. about 6¾″ (17.2 cm). No. 2126: H. about 1⅞″ (4.9 cm), D. about 7⅜″ (18.9 cm). Destroyed during World War II. (This information was kindly given to the author by Dr. Elisabeth Rohde.) The first came from the Bartholdi Collection; Luschey, *op. cit.*, pp. 125, 129-30; Fig. 40 illustrates No. 2126.

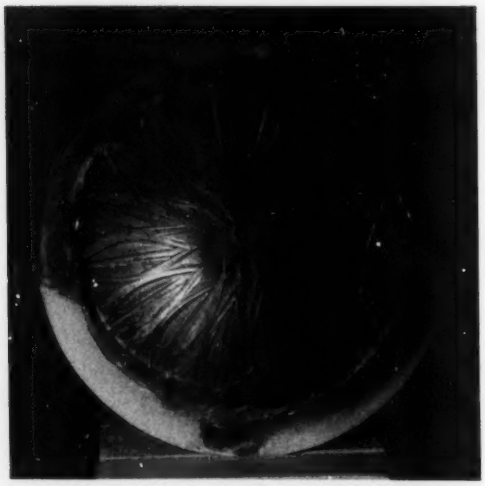

FIG. 29. *Bowl (No. II, 21). Private Collection.*

was shallow and of clear glass with few patches of iridescence. An eight-pointed petal rosette decorated the exterior. The second bowl (No. 2126; ill. in Luschey), of clear glass with green tint and slight iridescence, had a pointed petal rosette very similar to the bowl in Corning. The petals appear to have had medial grooves and to have radiated from an omphalos. Again a 4th century date is suggested.[85]

21. *Fragmented bowl in a private collection* (Fig. 29).[86] It is made of transparent green glass. The cut decoration consists of a 16-pointed star radiating from a circlet at the base. From this star emerges another rosette with 16 petals, each having a medial groove.

Stylistically, these five bowls form a distinct group. A late Achaemenid date might be suggested in view of the dates commonly accepted for the metal prototypes, the date of the Ephesus bowl, and the close proximity to the Hellenistic vessels mentioned above.

In this context the fragment of a fluted bowl of slightly greenish glass found at Persepolis[87] should be mentioned. This find demonstrates very clearly again how faithfully glassmakers and cutters imitated metal work.[88] The *terminus ante quem* is 330, the *terminus post* approximately the end of the 6th century. While this find again might point to a West Persian origin, it unfortunately does not clarify in greater detail the chronology of the cut glass of the pre-Hellenistic and Hellenistic periods.[89]

The last fragment of the group of Hellenistic transparent cut vessels from Gordion, fragment 22, may be later than the other Gordion fragments but is still closely related to them.

22. *Fragment from a beaker, Gordion, "Hellenistic tomb"* (Fig. 19).[90] Of clear thick glass with slight green tinge, this fragment was part of the rim and neck of a beaker. The high flaring rim has a beveled edge sloping outwards. The entire surface was ground: horizontal tool marks are clearly visible on the exterior. The object might have been turned on a lathe.

23. The shape of the original vessel might have been similar to a *beaker in the British Museum from Aegina*, made of clear thick glass with a green tinge (Fig 30).[91] The flaring neck and rim are practically identical with the Gordion fragment. The lower body is rounded, thus giving the object the shape of an inverted bell. Grinding marks are visible, especially on the interior. The bottom part is decorated with eight highly raised almond-shaped prunts pointed downwards. These petals have a complicated profile: each is framed by grooves and has a raised central part which is indented. The

85. For metal prototypes cf. Luschey, p. 129 ff.

86. D. about 6¼" (16.0 cm).

87. Schmidt, *op. cit.*, 1957, Pl. 67, No. 3; p. 92.

88. Cf. Schmidt, p. 92; Luschey, *op. cit.*, p. 41 ff.

89. On p. 93, Schmidt publishes also a glass "chalice" that looks Islamic, mold-blown, about 10th-12th century. Cf C. J. Lamm, *Mittelalterliche Gläser und Steinschnittarbeiten aus dem Nahen Osten*, Berlin, 1929-30, I-II, Pl. 12 ff.; cf. also Pl. 8, No. 14 and Pl. 22 for shape.

90. No. 3781 G 202. For the Hellenistic tomb cf. A.J.A., 60, 1956, pp. 250-2.

91. British Museum No. 95.10-7.1. D. rim, 3⅞" (9.8 cm).

dimension of the Gordion and the British Museum specimens can be assumed to have been similar (H. about 4″ [10.0 cm.], D. rim, about 3½″ [9.0 cm.]). Also the glass material is very similar in both specimens.

FIG. 30. *Beaker (No. II, 23), from Aegina. British Museum. (Photo courtesy Trustees of the British Museum.)*

This beaker is very closely related to the "finned" bowls mentioned above as well as to metal prototypes.[92] The dates of the metal vessels are still open to discussion. A very tentative date for the Gordion fragment and the beaker from Aegina would be the 2nd century B.C. according to the dating of the Gordion burial[93] although the possibility of a 3rd century date should not be dismissed.

Before passing to the goldglass vessel from Gordion attention should be drawn to the many vessels which might have come from the same or related Hellenistic workshops. There are single vessels and there are groups of closely related vessels. The following listing is not meant to be complete but should serve as an indication that there are quite a few glasses known which are more or less closely related to the foregoing vessels.

A. *Large vase of thick greenish glass, from Olbia, formerly in the Antiquarium, Berlin.*[94] Rostovtzeff dated it around 200 B.C. and Zahn called it "Hellenistic."[95]

B. *Group of pyxides of thick glass.*[96]

C. *A very large group of hemispherical, slightly conical or more shallow bowls* deserves special attention. They are generally of thick greenish, more rarely yellowish and amber glass, and are usually decorated with a few cut grooves on the exterior or interior (Fig. 27 of Mrs. Weinberg's article in this *Journal*).

They have, undoubtedly, not been blown and almost always show clearly visible concentric grinding (lathe) marks. They are commonly referred to as "Roman." It can, however, be assumed that many – if not all – predate

92. Courby, *op. cit.*, Fig. 75, i. Cf. 3rd cen. *cantharoi:* Courby, Fig. 109. Cf. also silver vessels with hemispherical lower sections and high flaring rims: cf. *Cambridge Ancient History,* Pl. Vol. III, pp. 58-9. O. M. Dalton, *The Treasure of the Oxus,* London 1925, No. 182-4, Fig. 75.

93. We have a lower limit of about 100 B.C. for the Gordion fragment. It is doubtful if the fragment is a later intrusion.

94. H. with cover 23½″ (59.6 cm). Formerly Vogell and von Gans Collections, then Antiquarium, Berlin; probably destroyed during World War II. R. Zahn, "Die Sammlung F. L. von Gans im Antiquarium," *Amtl. Ber.,* XXXV, 3, December 1913, col. 112-5, Fig. 52. Rostovtzeff, *Hellenistic World,* I, p. 372, Pl. XLIII, 1; III, p. 1408, n. 164.

95. Cf. also Panathenaic *amphorae.* Cf., however, a later ceramic parallel from Olbia, dated about 100 A.D.: E. H. Minns, *Scythians and Greeks,* Cambridge, 1913, pp. 354-6, Fig. 259-61. A vase in Toronto of apparently clear glass, covered with an opaque paint and having an acid etched decoration has been called Hellenistic: Royal Ontario Museum of Arch. No. 918.21.15; said to have come from a T'ang grave: D. M. Robinson, C. G. Harcum and J. H. Iliffe (ed.), *A Catalogue of the Greek Vases in the Royal Ontario Museum of Archaeology Toronto,* University of Toronto Press, 1930, No. 626, pp. 269-70, Pl. XCIX. J. Pijoan, "A Greek Glass Vase from China," *Brlgt. Mag.,* XLI, 1922, pp. 235-7; Fig. on p. 250. *Bull. of the R. Ont. Mus. of Arch.,* 21, October 1953, exhib. "West-East," Pl. 6, No. 78; pp. 21, 54. Rostovtzeff, *Hellenistic World,* III, p. 1408, n. 164: the piece ". . . is thought by some competent scholars to be of modern manufacture." The date of the vase seems to be late 19th-early 20th cen.

96. Cf. Mrs. Weinberg's paper in this *Journal.*

the Christian era.[97] Indications for their being Hellenistic are:

(a) they are closely related to the hemispherical bowls, either fluted or with leaves, which have been discussed above and whose shapes are paralleled by the gold-glass bowls.

(b) there are undecorated Megarian-type glass bowls with outcurved rims[98] which seem to belong to the same family and which again can be dated closely to the goldglass bowls.

They are, however, also related – at least technically – to the so-called pillar-moulded bowls of the 1st century A.D.[99] The problem is now: were such hemispherical vessels produced over a long period of time, i.e. about 3rd century B.C. – 1st century A.D., or is it possible to assume that the pillar-moulded bowls might have had 1st century B.C. predecessors?

D. *Group of vessels of heavy greenish ground glass, richly mounted,* probably of 1st century B.C. found in *South Russia.*[100]

If it were possible to sketch in a few words a history of clear cut glass of pre- and early-Roman date it might be as follows:

The tradition may have started in Assyria in the 9th century; glass manufacture must have been developed to a high degree by the late 8th century (Gordion omphalos bowl). The

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97. Examples are in many collections. About 10 alone are in The Toledo Museum of Art, others are for instance in the Victoria & Albert Museum and the British Museum. The bowl 52.1.69 in The Corning Museum of Glass belongs also to this type. Cf. for instance O. Vessberg and A. Westholm, *The Swedish Cyprus Expedition,* Lund-Stockholm, 1956, IV, part 3, pp. 128-9. E. Gjerstad, *ibid.,* Stockholm, 1935, II, pp. 206-9; Pl. XXXVIII: "Hellenistic 1." The staff of The Toledo Museum of Art, especially Mrs. N. J. Baer, was extremely helpful in assisting the author in studying the glass in Toledo.

98. Cf. for instance one in Toledo, No. 354.416; D. rim, 4¾" (12.0 cm); or another one found at Corinth, D. 4⅜" (11.0 cm): Cf. G. R. Davidson, *Corinth,* XII, No. 584, pp. 77-8, Fig. 6 and Pl. 54.

99. Cf. the bowls from Marion, 9, No. 33, Gjerstad, *loc. cit.* and Vessberg, *loc. cit.;* the early dating seems to be astonishing. It should here be noted that Vessberg, *op. cit.,* p. 128 refers to a bowl in Gjerstad, *op. cit.,* as "Pl. LXXXVIII: 3" whereas it should be: "Pl. LXXXVIII: 11." Cf. D. B. Harden, in: C. F. C. Hawkes and M. R. Hull, *Camulodunum . . . ,* Oxford, 1947, pp. 287-307. C. Isings, *Roman Glass from Dated Finds,* Groningen, 1957, p. 17 ff. gives references.

100. M. Rostovtzeff, *Iranians and Greeks in South Russia,* Oxford, 1922, p. 126 ff., Fig. 16. *Idem* (M. Rostowzew), *Skythien und der Bosporus,* Berlin, 1931, pp. 293, 548 ff. *Idem, Hellenistic World,* I, p. 600, Pl. LXVIII, No. 3. For a new photograph of the skyphos cf. R. W. Smith, in *Ars Orientalis,* II, 1957, Pl. 2, Fig. 4. Cf. the silver skyphos from Alesia, before 52 B.C.: Courby, *op. cit.,* Fig. 113. For later (?) parallels in glass cf. Isings, *op. cit.,* pp. 55-6. For a 1st cen. A.D. glass parallel for the cup-type cf. an example in The Corning Museum of Glass: D. B. Harden, "A Roman Sports Cup," *Archaeology,* 11, Spring 1958, cover and p. 2 ff. In this context a group of heavily cut glass beakers should briefly be mentioned. They are Roman but seem to be descendants of the late Hellenistic cut glass. A rim fragment of a beaker was excavated in London, decorated with highly raised rosettes (cf. this motif in Courby, *op. cit.,* Pl. XI ff., Fig. 76, No. 3) alternating with vertically oriented countersunk ovals. (The London Museum No. 21046. The author acknowledges his gratitude to Mr. Harden who brought this fragment to his attention.) The conical beaker from the Luxemburger Strasse in Cologne, formerly in the Niessen Collection, belongs in the same category (S. Loeschcke, *Beschreibung römischer Altertümer . . . Sammlung C. A. Niessen,* Cologne, 1911, No. 153, Pl. XXV). It has highly raised and countersunk shells, ovals and kidney-shaped protrusions. Such pieces were apparently copied in the cheaper mold-blown glass as testified by a beaker in Toledo with ovals and roundels framed by a large key band. Of highest importance are, of course, the Scandinavian finds. They have elaborate cut decoration and some even have a second layer of differently colored glass [cameo glass]. (G. Ekholm, "Orientalische Gläser in Skandinavien," *Acta A.,* XXVII, 1956, Fig. 6, 1; Fig. 10,a. *Idem,* "Imported Pieces . . . II: Glass Vessels with 'Cut Glass' Pattern," *Viking,* 20, 1956, p. 81 ff. Cf. also W. Hensel, "Le Dévelopment des Recherches Archéologiques sur les Origines de l'Etat Polonais," *Archaeologia Polonia,* I, 1958, p. 18, Fig. 12.) These vessels should all be grouped together and studied in their relation to cameo glass, to the so-called *diatreta*-vessels—of which the Scandinavian finds remind one strongly—and to the late Hellenistic glass. The relation of high quality cutting on clear glass to cameo cutting is further exemplified by a group of fluted or paneled handles broken off from shallow bowls. One in almost clear glass, is in Corning (55.1.143; *Glass from the Ancient World,* 1957, No. 382); the bowl to which it belonged had an overlay of bluish glass. Another similar handle in cameo glass is in the Toledo Museum (No. 358.553), consisting of a dark blue paneled straight part ending in a white ram's head. (The glass was, of course, copied from metal forms: for a prototype cf. one with a ram's head at the auction No. XVIII, *Münzen und Medaillen,* Basle, November 29, 1958, No. 45.)

Assyrian industry (or single factory) produced this type in the 7th century. The Persians might have adopted the technique and produced glass in the same areas and/or spread the knowledge westwards. The glassmaking role Syria played during this period is still very obscure, though it might have been a very important one. In the 5th and 4th centuries there could have been one or possibly a very few more or less specialized factories making vessels "in the old tradition" but often copying more "modern" metal shapes (finds from Ephesus, Persepolis). A fair guess for the location of these shops would be Western Persia, the Aegean, the Syrian coast and, later, Alexandria. About the 3rd century the quality of the cutting seems to have improved (Hellenistic fragments from Gordion). 2nd century glass must have looked very similar to the 3rd and 1st century glass, the latter being represented for instance by the Russian finds.

It does not seem to be too far fetched to assume that the group of extremely elaborately cut glass of the Roman Empire (see note 100) is a direct successor of the Hellenistic glass. It would, in turn, not be astonishing to find definite links between the early Roman cutting and the "diatreta" glasses. The large cameo glass manufacture was, undoubtedly, also closely related to this industry. A "decline" seems to have started about the 4th century A.D. though it should be admitted that very little is known of the Eastern glass industry between the fall of the Roman Empire and the beginning of the Islamic period as well as of the role Byzantium played during this period.

GROUP III

The third glass find of great importance at Gordion are the many fragments of a goldglass bowl of the 3rd century B.C. As it is made of clear glass and as it is certainly the product of a highly specialized glass industry, it is conceivable that this and related pieces were made at a center which also manufactured objects of the transparent cut glass treated above.

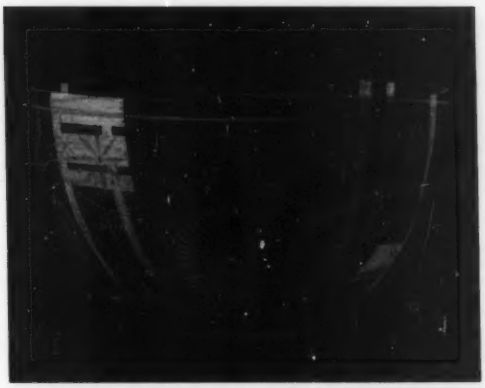

FIG. 31. *Goldglass bowl (No. III, 1), from Gordion. Rendering by Piet de Jong.*

1. *Fragmentary two layer goldglass bowl, from Gordion, City Mound*, 2nd half 3rd century B.C. (Fig. 31).[101] The clear glass has a slight green tint and occasional bubbles of varying size. Some areas are slightly rough and pitted, a few patches of ochre-colored scum and of iridescence are detectable, especially on the exterior.

The hemispherical vessel consists of two bowls. The exterior of the inner bowl was covered with gold foil and then set into a second bowl of slightly larger size to protect the gold foil.

The design consists of the following: below the rim there is a single gold band. The remaining surface is divided by festoon-like chains into polygons with curved sides, the chains consisting of small diamonds. These polygons enclose rosettes; below the rim there is a band of five rosettes, each built up of about ten radiating diamonds. At a second level there is another band of five rosettes which are larger than the preceding ones and built up of about 40-60 slender petals radiating from concentric circles. A single large rosette fills the base.

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101. No. 3165 G 172. The estimated D. of the rim is about 5½" (14.0 cm), the estimated H. about 3⅜"-3½" (8.5-9.0 cm). *A.J.A.*, 60, 1956, p. 250; Pl. 81, Fig. 1.

Almost the whole rim section has been preserved. The entire vessel can be reconstructed from the many surviving fragments.

The process of manufacture was presumably as follows: the two clear bowls were made at the same time, as a chemical analysis of both revealed the same composition.[102] The outside dimensions of the inner bowl had to be equal to the inside dimensions of the outer one. (The difficulties of this sentence are nothing compared to the difficulties of making these two bowls.) In order to make them both fit snugly considerable grinding and polishing had to be done. Gold leaf was then applied to the exterior of the inner bowl on which the design had been painted in a size or glue solution to which the leaf adhered.[103] (It is unlikely that a thin layer of gold paint was brushed onto the surface). The desired pattern might also have been achieved by engraving with a sharp tool into the gold layer, thus removing the gold at those places which were to be clear.[104] The decorated bowl was then placed inside the second one. The two were probably not glued together along the rim section, as was the case in the 18th century *Zwischengoldgläser*. They appear to have been fused by a light firing.[105] This was probably not always easy as the glass had to be softened to a point where the two glass layers fused and the vessel still kept its shape. Finally, both rims were ground down together to give a smooth edge. The joint, as viewed from the top, does not run evenly parallel to the outer edges of the bowls; its distance to both edges varies and it appears slightly wavy. Whether this was caused by the softening of the glass when the two bowls were fused or not, it does indicate a considerable grinding operation, at least along the rims of the two bowls.

The date – 2nd half 3rd century – confirms Rostovtzeff's and Wuilleumier's conviction that the goldglass bowls of "Megarian type" were of the 3rd century.[106] A few parallels are known; they have been dated, however, almost solely through stylistic comparisons with metal and ceramic work.

2-3. Most famous are the two *goldglass bowls found at Canosa* (Apulia), now in the *British Museum* (frontispiece).[107] The surfaces of both bowls show grinding marks. A very elaborate petal pattern interspersed with tendrils and acanthus motifs radiates from a double rosette. Below the rim there is a double volute frieze. Cut grooves accompany the rim and "hide" the joint of the two layers. This joint does not occur at the edge (Gordion bowl) but

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102. The analysis of a Roman [about 4th cen. A.D.] gold glass medallion, on the other hand, showed that the compositions of the two layers were different enough to prove that in this instance the second layer was made of a glass melted probably after the gold engraving was finished on the first one. The technique might have been the one described in Heraclius (about 1000 A.D.), *De Coloribus et Artibus Romanorum*, I, 5: ed. A. Ilg, *Quellenschriften für Kunstgeschichte*, IV, Vienna, 1888, pp. 6-8; it is probably the first written account on this technique.

103. Suggested by Thomas S. Buechner.

104. A good description of this process in Cennino Cennini, *Libro dell'Arte*, in the ed. of D. V. Thompson, Jr.: *The Craftsman's Handbook*, Yale University Press, 1933; chapter XI, pp. 112-3.

105. Cf. E. Dillon, *Glass*, New York and London, 1907, p. 46.

106. Rostovtzeff, *Hellenistic World*, I, p. 372. P. Wuilleumier, *Le Trésor de Tarente* (Coll. Edmond de Rothschild), Paris, 1930, pp. 29-30. *Idem, Tarente des Origines à la Conquête Romaine*, Paris, 1939, p. 363. Dillon, *op. cit.*, pp. 45-6, and O. M. Dalton, "The Gilded Glasses of the Catacombs," *Arch. J.*, LVIII, 1901, pp. 247-8, also seemed to incline towards a Hellenistic date. Cf., however, Dalton, *Byzantine Art and Archaeology*, Oxford, 1911, p. 613: the date in the caption for the Canosa bowl seems to be a typographical error. Others suggested a Roman origin as so-called Augustan *millefiori* vessels are thought to have been found with the Canosa bowls: A. Kisa, *Das Glas im Altertume*, Leipzig, 1908, III, p. 838. W. B. Honey, *Glass. A Handbook . . .*, London, 1946, p. 33.

107. No. 71.5-18.1 and 2. (The frontispiece reproduces 71.5-18.2.) H. 4¾" (11.2 cm). D. rim 8" (20.1 cm). Different views of the bowls in Wuilleumier, 1930, Pl. X, No. 5. Rostovtzeff, *op. cit.*, I, Pl. XLIII, 2, Harden, *op. cit.*, Pl. 25 B. On the chronology of the Canosa finds, cf. P. Jacobsthal, *Early Celtic Art*, Oxford, 1944, text. Vol., pp. 146-152; the comments on the glass, p. 148, by R. Zahn.

below it as the wall of the top of the inner vessel is thicker so that it overlaps the lower outer bowl. The two Canosa bowls are, according to Jacobsthal, 1st half of the 3rd century B.C. The general opinion as to their provenance is Alexandria. Their metal and ceramic parallels are attributed to Egypt, particularly to Alexandria.[108]

4. Another *goldglass bowl* very similar to the Canosa vessels, but with an inner bowl of blue glass, published in color by P. Wuilleumier, is in the *Rothschild Collection.*[109] It is slightly smaller and its petal and tendril decoration is less exuberant than on the Canosa bowls (Wuilleumier suggests a slightly earlier date for it). The rim section has an interwoven fret band.

5. Of the same type is the *rim fragment of a bowl in The Metropolitan Museum of Art.*[110] A frieze of wine leaves, tendrils and berries (in transparent blue) along the rim is more elaborate than on the previous bowls. A scroll band repeats the motif on the Canosa bowls. The joint between the two glass bowls is on the interior, with the outer bowl overlapping the inner one. At the joining line a groove has been cut into the glass.

6. Another Megarian-type *bowl* of slightly greenish glass is in the *Musée d'Arts et d'Histoire,* Geneva (Fig. 32).[111] The petal and acanthus leaf decoration is similar to the Canosa bowls, though less elaborate. The rim construction is of the Canosa-type, with cut grooves along the rim. Deonna suggests Alexandria as provenance and a 3rd century B.C. date.

FIG. 32. *Bowl (No. III, 6). Geneva.*

7. Alexandria could also be assumed to have been the origin for another *goldglass bowl found near Mosdok* in the Northern Caucasus, first published by Kamilla Trever.[112] The bowl is shallower than the preceding pieces. The pattern consists of a rosette with four regular and four palmette petals emerging from another petal rosette at the bottom. Below the rim there are three bands with turret motifs, a wavy tendril, and a conventional laurel frieze with blue berries.

The Gordion bowl is closely related to the bowls described above. Its size is similar to the Rothschild piece. The form of the vessel is similar to both the Rothschild and Canosa bowls, only with the rim section cut off. It lacks,

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108. Thompson, *op. cit.*, p. 455. Cf. Courby, *op. cit.*, p. 432 ff.; Fig. 75. An Italian origin for the Canosa and related bowls is suggested by P. Wuilleumier, 1939, p. 263.

109. H. 3⅛" (8.0 cm), D. 5⅜" (15.0 cm). Bought in Palestine; Wuilleumier, 1930, pp. 29-30, Pl. XI-XII.

110. No. 23.160.76. Estim. D. about 5⅝" (14.0 cm). Chr. Alexander, *B.M.M.A.*, XX, 1925, p. 183. Rostovtzeff, *op. cit.*, I, p. 372; Pl. XLIII, 4.

111. Heavily restored. H. 3¾" (9.5 cm), D. 6⅝" (17.5 cm). *Musée Fol. Cat. Déscript.*, II, Geneva, 1875, No. 3634, p. 509, Pl. XI, I. W. Deonna, "Bol en Verre à Décor Doré," *R.E.A.*, XXVII, 1925, pp. 15-21.

112. H. 3⅜" (8.5 cm), D. 6⅛" (15.5 cm). K. V. Trever, *Monuments of Greco-Bactrian Art,* (in Russian), Moscow-Leningrad, 1940, No. 62, Pl. 50, pp. 158-162. Madame Trever, however, considers a Greco-Bactrian provenance, about 2nd cen. Ch. Picard suggests Alexandria, "Sur une Coupe de Verre à Dorures d'un Kourgane du Caucase Septentrional," *R.A.*, 6éme s., XXV, 1946, pp. 173-182. Cf. also K. Parlasca, *op. cit.*, p. 146; Fig. 9. Also published in: E. A. Levinson et al., *Khudozhestvenoe Steulo i Ego Premenie Varkitekture,* Leningrad-Moscow, 1953, Fig. 56.

however, the cut grooves and the decoration is less elaborate.[113]

The form and decoration of all these pieces is derived from metal and ceramic Megarian bowls. The diamond motif on the Gordion and Rothschild bowls appears on Egyptian prototypes.[114] The chain pattern itself is comparable to a similar design on a ceramic Megarian bowl from the Athenian Agora.[115]

Because of their special character it can be assumed that these goldglass bowls originated at a single center, possibly Alexandria, and that they were made during a rather brief period of time.

A literary reference of the 3rd century, in addition to the items mentioned in the Delian inventories[116], may be appropriate here; M. L. Trowbridge translates a passage from Athenaeus as following: "In a procession of Ptolemy Philadelphus of Alexandria (284-246 B.C.), two gold-mounted glasses were carried."[117] Rostovtzeff, however, interprets the text as "glasses with gold decoration."[118] If this interpretation is correct we would have a possible parallel to the double and single goldglass vessels of the 3rd century.

113. For other pre-Roman gold glass with double and single layers cf. Rostovtzeff, *op. cit.*, I, pp. 372-3, Pl. XLIII and XLIV; III, pp. 1408-9, n. 165-6; p. 1553, n. 198. R. dates glass of this type about 200 B.C. and considers Alexandria as the place of origin. The plate from Trasilico is probably the most important in this group: esp. E. Galli, "Riflessi di Pittura Alessandrina in Calabria," *Riv. Ist. Arch.*, 6, 1937, p. 32 ff. The author was unable to locate a reference to a fragment of a double-layer vessel (?), found in one of the tombs at Karalar [1st cen. B. C.].

114. Cf. this motif in Courby, Fig. 76; Fig. 77, No. 2.

115. Thompson, *op. cit.*, D. 38, pp. 381-3. Cf. also Courby, Pl. XII, 7, Fig. 80, No. 1.

116. F. Durrbach & P. Roussel, *Inscriptions de Délos;* cited in Rostovtzeff, III, p. 1409, n. 165.

117. Athenaeus, 5, 30, as cited in Trowbridge, *op. cit.*, p. 154.

118. *Op. cit.*, III, p. 1409. So does Kisa in his: *Die antiken Gläser der Frau Maria vom Rath*, Bonn, 1899, p. 91: *"Ganz vergoldete Gläser."* Mr. Harden also confirmed this interpretation.

GROUP IV

The following concerns a problematic find from Gordion which might be of great importance.

Many very small *fragments of a blown vessel, from Gordion, City Mound.*[119] The fragments were found in a soft fill in a Hellenistic layer.[120] There might have been later intrusions in the "soft fill": there were Roman settlements at the City Mound, and the neighboring areas have been occupied on and off since Roman times although the City Mound itself and the immediate surroundings do not seem to have had any permanent settlement during this long period.

The clear thin glass has a faint pink tint and a few minute bubbles. There are no indications of weathering nor of age or wear. About two-thirds of a base, a spout-like part, and about 200 very small fragments, both curved and flat are preserved. The fragments definitely come from a single vessel. This might have been a bulbous bottle (?) of ellipsoid cross section with a concave neck flaring towards the rim. There seems to have been a sort of foot-like base with pushed-up center, with a maximum D. of about 2". From the fragments, a few of which Mrs. Muscarella of the excavation staff was able to fit together, some flat sections (from the body?) and curved sections of the neck (?) support this tentative reconstruction. A spout-like, slightly discolored piece must also have been part of the vessel.

No rim section nor any fragment showing even traces of a pontil mark have been found.

The quality of the glass is excellent and can only stem from a glass manufacturer of the first order. It was unquestionably free blown. No parallel, however, can be given which would help to date this vessel. It is doubtful

119. No. 3202 G 176.

120. The top Hellenistic layer is generally dated pre-189 B.C.; for the almost complete abandonment of the settlement at that time cf. *A.J.A.*, 60, 1956, p. 250.

that it is modern. The Roman fragments at Gordion are quite different; Islamic glass has not been found at all at that site.[121] A Hellenistic date seems to be impossible as it is generally thought that glass blowing was invented during the late 1st century B.C.[122]

There seems to be no plausible explanation. This single unstratified find will not change prevailing opinion as to the date of the invention of the blowpipe.[123] A few glass finds in past years, however, have forced us to reconsider many datings and attributions in the history of ancient glass. This find may be one of them.

121. There is, however, a large amount of cut Islamic – usually fragmentary – material in existence which sometimes is of thin "crystal" clear glass without any weathering marks.

122. Most recently Harden, *op. cit.*, p. 322. Cf. *idem*, "Glass Making Centres and the Spread of Glass Making from the 1st-4th Centuries A.D.," *Congr. Intern. d'Etude du Verre*, Liège, 1958, "rapports," p. 4. Isings, *op. cit.*, p. 1 ff. Compare also A. Kisa, "Die Erfindung des Glasblasens," *Jahrbuch für Altertumsfreunde*, I, 1907, p. 1 ff. For a general account cf. Honey, *op. cit.*, p. 21 ff.

123. Compare a few *ampullae* of blown glass from Samothrace which were found in a late Hellenistic context: K. Lehmann, *Samothrace. A Guide to the Excavations and the Museum*, New York University Press, 1955, p. 95, Fig. 47.

Spectrographic Examination of the Gordion Omphalos Bowl (I, 1)

THROUGH THE COURTESY OF CORNING GLASS WORKS

Silicon	Major	Titanium	0.05
Boron	0.01	Zirconium	0.001
Sodium	8 plus	Copper	0.005
Potassium	2	Iron	0.1
Lithium	0.002	Nickel	0.002
Aluminum	0.3	Silver	0.0003
Antimony	0.1	Manganese	0.005
Magnesium	3	Strontium	0.01
Calcium	5	Rubidium	0.001
Lead	0.001	Vanadium	0.001
Barium	0.002		

Not detected: Cd, Be, Zn, Bi, P.

FIG. 1. *Left: Three fragments of window glass (G. 58. 17 a, b; G. 58. 18). Probably 7th century. Right: Rim and shoulder fragment of a vessel (G. 58. 16). Probably 7th century A.D.*

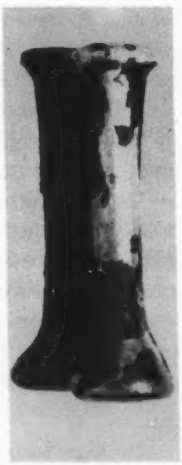

FIG. 3.
Unguentarium *(G. 58. 60). Probably 7th century.*

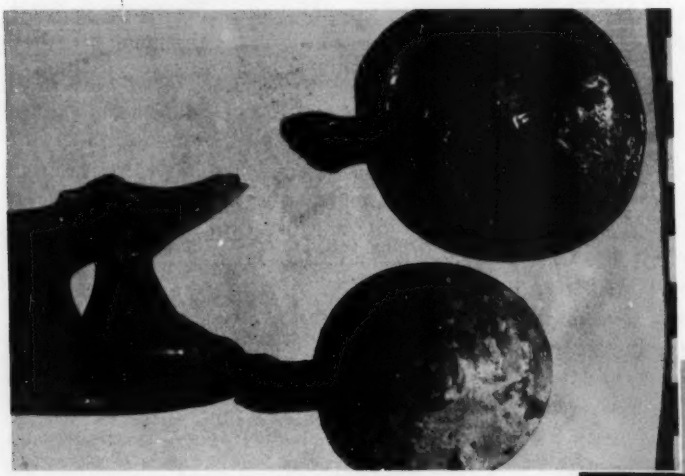

FIG. 2. *Fragmented stemmed goblets (G. 58. 46, 44, 45). Probably 7th century.*

FIG. 4.
Fragment of a spheroid bowl (G. 58. 32). Probably 7th century.

A PRELIMINARY NOTE ON THE GLASS FOUND AT SARDIS IN 1958

GEORGE M. A. HANFMANN

DURING the summer of 1958 a joint expedition from the Fogg Museum of Harvard University and Cornell University, sponsored by the American Schools of Oriental Research and supported by a grant from the Bollingen Foundation, excavated at Sardis, capital of Lydia and a flourishing urban center in Hellenistic, Roman, and Byzantine times. A considerable quantity of glass was found in the six sectors opened by the expedition. Only very tentative information, however, can be given at this stage prior to the detailed study and examination of the material. The following notes are based on the catalogue of glass objects prepared by Mrs. Jean (Sherman E.) Johnson and on a brief digest compiled by Miss Lenore Keene. Various helpful comments on the material were made by Ray Winfield Smith, who paid a visit to Sardis late in July.

Sardis is rich in Roman and Byzantine glass. Indeed, after the First Sardis Expedition (1910-1914), H. C. Butler had planned the publication of a special volume on glass,[1] but the material perished in the upheaval that followed the First World War. Our findings in 1958 make it probable that Sardis possessed production facilities for the manufacture of glass. Not only does the quantity of glass found favor this conjecture; there is a possibility – yet to be confirmed by appropriate tests – that glass was being made at the building "CG" located far out toward the eastern boundary of the Roman and Byzantine city. Here a structure of large masonry underwent considerable changes in Byzantine times. Just outside the western chamber of the large "Main Arch," which was transformed into a closed room by the Byzantines, there came to light strata of charcoal, lime, as well as lumps of material covered with glassy substance, and smaller pieces resembling clinkers.[2] Elsewhere in the structure were

1. H. C. Butler, *Sardis*, 1, 1922, viii, x, cf. pp. 83, 121, 154. Cf. T. L. Shear, *American Journal of Archaeology*, 26, 1922, p. 404: glass bottle and beads found in 1922.

2. Cf. G. R. Davidson and F. R. Matson, "A Mediaeval Glass-Factory at Corinth. Technological Study of the Glass from the Corinth Factory," *A.J.A.*, 44, 1940, pp. 297-327, for the 11th-12th cen. factory found at Corinth. For a possible Roman glass factory at Tamassos, Cyprus, cf. O. Vessberg, "Roman Glass in Cyprus," Institutum Romanum Regni Sueciae, *Opuscula Archaeologica*, 7, 1952, p. 157 f. Discovery of furnaces for glass making is reported from Athribis; the date is 2nd-4th cen. A.D. American Research Center in Egypt, *Newsletter* No. 29, May 1958.

found Byzantine coins of the tenth century which may indicate the approximate date of Byzantine activities. We must await the outcome of tests to confirm or discard the hypothesis that glass making took place in this area, particularly as only a very small strip of it was excavated in 1958.

The greatest quantity of glass was found in three rooms attached to the south facade of the large building "B" located alongside the modern (and medieval) east-west highway.[3] These rooms we believe to have been shops or restaurants of the Early Byzantine period. Tentatively, we assume that the major level excavated in 1958 (Level II) dates from the seventh century A.D., as a sealed deposit of several coins of Heraklios (610-641 A.D.) was found in a construction of tiles on a floor of this level. A lower level (Level III) which may be Late Roman is as yet insufficiently known. As far as present knowledge goes, the shops appear to have come to an end in the seventh century A.D., when parts of the face of the large building behind them crashed down, burying them in a mass of rubble.

Technical examination of the glass of Sardis is yet to be made. For the time being, it may be noted that an olive-green color is frequent. Together with reasonably clear glass it constitutes a major category. The clear glass is often bluish in the break. In contrast to glass found in the Byzantine factory at Corinth, iridescence is common.[4] Another frequent form of discoloration, especially with window glass, is a surface layer that has become nearly black and is flaky.

Almost half of the glass found in the "Byzantine Shops" was from window panes.[5] (Fig. 1, left); because some of the fragments have curved as well as straight sides, it is possible that they come from arched windows as well as from circular window panes. Raised rims, convex in section, occur, but more commonly the rim is level with the pane and has a rounded section. Unlike the fragments of Byzantine window panes from Corinth, which are convex,[6] most of those from Sardis are either flat or have a curiously wavy surface. Some are greenish, others fairly transparent. Diameters up to forty centimeters are represented among the curving fragments. If our dating in the seventh century is correct, the window glass from Sardis is earlier than the examples known from Samarra (ninth century), Corinth (eleventh to twelfth century), and Kahriye Cami (twelfth century?). It may, in fact, be closer to the roller-moulded Roman window glass from Karanis (second to fourth century A.D.) than to the Islamic and Middle Byzantine examples.[7]

Tableware was abundant but poorly preserved. The most popular shapes were bowls or cups on ring bases (40%),[8] very thin-walled,

3. For the location of this building cf. H. C. Butler, *Sardis*, 1, Ill. 18.

4. *Cf.* F. R. Matson, *loc. cit.*, p. 326. D. B. Harden, *Roman Glass from Karanis*, Ann Arbor, 1936, p. 10.

5. G. 58.17 a, b: two fragments of circular pieces with simple rims; window glass? Clear, bluish in break; incrustation, iridescence. G. 58.18: circular fragment with double (rolled) rim; green; D. 12⅝" (32.0 cm).

6. *Cf.* G. R. Davidson, *loc. cit.*, p. 322, Fig. 23. Nos. 73-76, for Corinth.

7. C. J. Lamm, *Das Glas von Samarra*, Berlin, 1928, pp. 125, 127 f., Fig. 72, where diameters from 15¾" (40.0 cm) to 21⅝" (55.0 cm) are known. *Idem*, *Mittelalterliche Gläser und Steinschnittarbeiten aus dem Nahen Osten*, Berlin, 1929-30, I, p. 11. Corinthian examples are from circular panes of green color, with double edge, and diameters from 5⅛" (13.0 cm) to 6¾" (17.0 cm). Kahriye Cami, from recent excavations (1958). Similar glass from Sadowitz in Bulgaria is in the British Museum, 1938, No. 5-31 D. B. Harden, *op. cit.*, p. 303, Pl 22, described as green, "roller-moulded." He and Lamm give references to the not infrequent occurrence of Roman glass windows; *cf.* especially A. Kisa, *Das Glas im Altertume*, Leipzig, 1908, 2, pp. 363-385. G. R. Davidson, *Corinth*, XII, Princeton, 1952, pp. 143-145, No. 1060 publishes Roman window glass of the 4th cen., some of it olive-green, some transparent as at Sardis.

8. *Examples:* G.58.22(408), G.58.23(409): ring bases; olive-green; D. of bases 2" (5.0) and 1⅞" (4.0 cm); from Room 3, above Level II. G.58.27(387 B): ring base; greenish; D. of base 2" (5.0 cm); from "Kitchen" in Room 3, Level II, floor 1. G.58.71 (866): ring base; yellow-brown to green; D., 1¾" (4.5 cm); from "LB," Room B, at 4½' (14.0 cm). Possibly Late Roman. G.58.77 (922): ring base, clear; D. 2⅛" (5.2 cm); from "LB," Room E, surface to ca. 20" (50 cm). Byzantine date

stemmed goblets (Fig. 2) with bases that usually flare downward (20%),[9] large plates with rounded rims (20%), and elongated miniature bottles (Fig. 3) related to the so-called "tear flasks" (toilet bottles, *unguentaria*).[10] Another type of flask, of pale blue color, has a short neck which goes without a break into a vertically ribbed body.[11]

It is noteworthy that the few examples from the late Roman Level III below the shops show some divergencies in shapes and technique. Thus the miniature bottle (G.58.15) is squatter, and the pedestaled goblet even thinner-walled and the stem more vertical than those assigned to the seventh century A.D.

The squat bottle[12] found in a sarcophagus built of bricks and covered with stone slabs is probably also late Roman. This burial was part of a cemetery located on Kagirlik Tepe, a hill northeast of the temple of Artemis.

While the glass makers of Sardis were prolific, they were not overly ambitious. "A complete specimen of figured glass commonly known as Phoenician"[13] was found by the First Sardis Expedition, but none such appeared among our material, nor, indeed, any example of very intricate decoration. Fragments of three flasks are decorated with glass threads.[14] Part of a spheroid bowl displays oblique white stripes painted on dark green glass (Fig. 4).[15] Two vertically ribbed flasks or bottles and one horizontally ribbed bowl are attested by fragments.[16]

Glass bracelets are so far not represented among the material from the "Byzantine Shops" of the seventh century, but occurred at building "CG" and particularly at the Roman building "LB" in the Artemis precinct.[17] It seems that at "CG" bracelets of green and blue glass[18] were associated with Byzantine strata dating

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possible. G.58.88 (1026): ring base; green; D. 2¾" (7.1 cm); from "LB," Room B, with coin of Manuel I (1143-1180). This is from a larger vase. The smaller vases may be of the general types known in the Roman period, e.g., Metrop. Museum, *Cesnola Collection Guide*, No. 5274, Cyprus, 2nd-3rd cen. A.D. O. Vessberg, *Opuscula Archaeologica*, p. 114 ff., Pl. 2:1-12. Harden, *op. cit.*, Classes II and III, p. 63 ff. Davidson, *Corinth*, XII, Nos. 620 ff., Fig. 7, 1st-2nd cen. A.D. Byzantine continuators: Davidson, *A.J.A.*, 44, 1940, p. 314, Figs. 15:25-27; Fig. 14, No. 20 is particularly similar to Sardis G.58.77.

9. G.58.44-46: bluish-green; iridescent; brown surface discoloration; base D. 2¼" (5.5 cm), 1¾" (4.5 cm), 2" (5.0 cm); from Byzantine Shops, Room 1, Level II. Here Fig 2. *Cf. Corinth*, XII, p. 110 f., Nos. 720-721, Fig. 12, Pl. 57, 11th-12th cen., but the author quotes Lamm, *Mittelalterliche Gläser*, for the statement that the type is Syrian, 6th cen. It is, at any rate, not Roman. Conversely, the goblet stem from Level III, which is possibly late Roman, G.58.34, resembles Harden, *Karanis*, p. 167 ff., Nos. 479-489, Pl. 6 and 16, "fourth century or later." He calls these "cups."

10. G.58.60: greenish to clear; concave base; H. 2½" (6.5 cm); from Byzantine Shops, Room 1, Level II, over floor 2. *Cf.* Harden, *op. cit.*, pp. 264 ff., 272, No. 799, Pl. 20, 2nd-4th cen. Vessberg, *op. cit.*, p. 136 ff., Pl. 8:17-18, 25, 9:2, same range. The piece is between "triangular" and "bell-shaped" body (in section). The neck widens upward. The bottle from Late Roman (?) Level III, G.58.15, is more like Vessberg, Pl. 8:16.

11. G.58.47: from Byzantine Shops, Room 1, Level II, floor 1. *Cf. A.J.A.*, 44, 1940, p. 319, Fig. 18, No. 5. *Corinth*, XII, Nos. 780-784, 11th-12th cen. "Post-Roman," according to Ray Winfield Smith. However, another vertically ribbed bottle, G.58.39, from Room 2, Level II, has a chance of being Late Roman.

12. G.58.14: bluish; iridescent; simple rim, slightly concave base; H. 4½" (11.5 cm); from Grave "H." *Cf.* Vessberg, *op. cit.*, p. 131 f., Pl. 7:11-12, and for the shape of body, Pl. 33:20, from the Limassol tomb dated in the 2nd cen. A.D. Vessberg quotes evidence for 3rd-4th cen. A.D.

13. H. C. Butler, *Sardis*, 1, p. 83; on p. 121 he mentions "glass bottles in colored patterns" found in tombs.

14. G.58.83: clear glass; from "House of Bronzes," not later than 400 A.D. G.58.68: from Byzantine Shops, Room 3, Level II, floor 2, 7th cen. A.D. G.58.47: on fragment of rim; from Room 1, over Level II, floor 1.

15. G.58.32: thin-walled; dark to medium green; oblique bands of painted (?) white; D. 3¼" (8.0 cm) at rim; from Byzantine Shops, Room 2, Level II, floor 2.

16. Flasks, *cf.* n. 10. Bowl: G.58.74: grey-green: from inside South Apse of Building "B." Possibly Middle Byzantine.

17. For the location of the Roman building "LB" in the Artemis precinct, *cf. Sardis*, 1, Plan III, lower left corner.

18. *Green:* G.58.41: from "CG," east chamber of Main Arch; *99.00, is certainly Byzantine. G.58.54. from "LB," with Byzantine pottery. G.58.64c, with red thread, unstratified. *Blue:* from "CG," east chamber of Main Arch; *98.50, possibly 10th cen. A.D. G.59.93: from "LB." Green and blue bracelets are already known in the Roman period. *Cf.* Vessberg, *op. cit.*, p. 154. Harden, *op. cit.*, p. 283, with references. For Byzantine bracelets of blue glass, *cf. Corinth*, XII, Nos. 2141-2142.

from the tenth century and later. The building in the Artemis precinct was occupied until the fifth century A.D. and also experienced a meager occupation in the Byzantine period. On the evidence of coins, the latter took place in the twelfth and early thirteenth centuries, and some of the bracelets would seem to belong to this phase. The so-called "Arab" bracelets made of twisted rods of black, white, and red glass may reach that far back in time.[19]

The earliest piece of glass found at Sardis was unstratified. It is a fragment of translucent, pale, blue-to-white, massive cut glass, featuring a straight vertical wall on a ring base.[20] According to Ray Winfield Smith, it may have been made as early as the sixth century B.C.

We hope that future campaigns at Sardis will provide, through association with coins and other datable material, a number of chronologically fixed points, and that eventually it will be possible to study the development of the local glass industry from the Early Roman through the Middle Byzantine periods.

19. Twisted bracelets: G.58.1: from trench south of Artemis Temple, not clearly stratified. G.58.3: from "CG," near surface, not stratified. G.58.54b: from "LB," in fill with Byzantine pottery and a bracelet of green glass. G.58.64a: from "LB," unstratified. G.58.65,a: from "LB," after 5th cen. A.D. G.58.81 a, b: from "LB," with objects from secondary occupation, among them a coin of the 12th cen. A.D. G.58.93 a-b, with blue bracelet. The twisted spirals occur at Corinth, *Corinth*, XII, Nos. 2143-2147, some of which use threads of red, like those of Sardis. They are dated 10th-12th cen.

20. G.58.52, D. of base 2¾" (7.0 cm). Found in surface fill outside southeast corner of Building "B."

FIG. 1. *Moules de pierre, trouvés à Milet. Stone moulds found at Miletus. H. approx. 4¾" (12.0 cm).*

SUR CERTAINS MOULES, TROUVES A MILET

HENRI SEYRIG

PARMI les objets islamiques trouvés dans les fouilles de Milet figurent un certain nombre de matrices, ajustables quatre par quatre pour former des moules complets[1] (Figs. 1 and 2). Ces objets sont taillés, avec une certaine élégance, dans une pierre qui est, paraît-il, la *chlorite*, et qui, facile à travailler, montre aussi quelque résistance à la chaleur. Les quatre parties de chaque moule se laissaient assembler à l'aide de goujons de plomb, qui s'y trouvent encore en place. Deux photographies des éditeurs, que nous reproduisons, donnent une idée de ces objets, et représentent aussi le moulage en plâtre que l'on peut tirer de deux d'entr'eux. Les photographies, paraît-il, sont d'une grandeur un peu inférieure à la réalité: les moules devaient donc mesurer quelque 12 cm.

L'éditeur des objets, F. Sarre, a remarqué leur analogie, assez frappante en effet, avec les vases que l'on regardait alors comme des gre-

1. F. Sarre, dans K. Wurzinger, P. Wittek, F. Sarre, *Das islamische Milet*, Berlin, 1935, p. 77-78. Cette publication, plus que sommaire, ne dit rien sur les circonstances de la découverte, ni sur le nombre des objets, ni sur leurs dimensions exactes, ni même sur le nombre et la variété des décors qu'ils présentent. A en juger par les photographies, il devait y avoir au moins trois décors différents.

FIG. 2. *Epreuves de plâtre, tirées de deux moules. Plaster casts made from two moulds.*

nades à feu grégeois, et qui ne sont probablement que de pacifiques éolipyles, destinés à attiser la flamme des foyers domestiques[2]. Ces moules ont donc été considérés comme des moules à grenades, et, comme leur dimension paraît d'abord très petite, Sarre cite certaines grenades du musée de Moscou, qui ne sont paraît-il, pas plus grandes. Mais cette exégèse se heurte à d'autres objections. Connaît-on des grenades moulées? Les auteurs qui en parlent n'en citent aucune, et elles doivent être bien rares: toutes celles que j'ai vues, pour ma part, étaient tournées[3]. En outre, les matrices en question se prêtaient à mouler des objets pleins, mais comment pouvait-on y mouler des vases creux? Encore laissons-nous de côté l'illusion de Sarre qui consiste à croire que ces matrices allaient au four avec leur contenu, et y étaient soumises à une température de 8 à 900 degrés centigrade, d'où le choix de la chlorite:

2. L'explication correcte de ces poteries a été donnée, à mon avis, par W. L. Hildburgh, dans *Archaeologia*, 94, 1951, p. 52-55.

3. Bien que j'aie manié un grand nombre de ces objets, mon expérience n'est pas exhaustive, et J. Sauvaget dit que "*certaines de ces grenades ont été moulées, mais* (que) *l'immense majorité a été faite au tour* ("Flacons à vin ou grenades à 'feu grégeois'," Mélanges Grégoire, *Pankarpeia*. Vol. 1, 1949, p. 528, note 1; cf. M. Mercier, *Le Feu grégeois*, Paris 1952, p. 107): une référence eut été bien utile, et l'on peut craindre qu'elle n'eût visé, justement, les matrices trouvées à Milet, qui devaient être connues de Sauvaget. Il arrive – me dit-on, car je ne l'ai pas remarqué moi-même – que ces vases fussent tournés en deux moitiés, une pour le haut, une pour le bas: peut-être que la suture des deux moitiés a parfois été prise pour celle d'un moule biparti. Quoi qu'il en soit, ces poteries, objet de tant de discours, n'ont jamais été étudiées d'ensemble, avec la précision que l'on souhaiterait. Voir la notice que je leur consacre dans *Syria*, 36, 1959.

car que devenaient alors les goujons de plomb, fusibles à 327 degrés? Visiblement, tout cela ne va pas.

Or, en l'absence d'une description précise, qui fait défaut, la photographie permet de voir que les moules sont ouverts à leurs deux extrémités: en bas très largement, en haut par un étroit canal. Ils sont donc destinés à recevoir une substance liquide ou plastique, dont l'entrée dans le moule exigeait un évent pour la sortie de l'air. Il n'est plus question ici de céramique. S'agirait-il de moules d'orfèvre? Nous croyons plutôt qu'il s'agit de moules de verrier, destinés à souffler de légères fioles à parfum. L'extrémité pointue, la forme bulbeuse qui termine le col, indiquent probablement que ces parties, une fois le flacon sorti du moule, étaient reprises à chaud par l'ouvrier, de manière à former un pied et un goulot appropriés. Et sans doute le refroidissement rapide des minces parois vitreuses ne mettait-il pas en danger les goujons de plomb.

Mais je dois laisser aux techniciens du verre le soin de décider si ces conjectures méritent d'être retenues. Elles restitueront, dans ce cas, à l'histoire de la verrerie arabe quelques intéressants témoins.

English Summary

The author discusses a group of four part moulds of Islamic origin found at Miletus and presumably made of chlorite.

Sarre who published them considered that they had served to mould small grenades. The author, however, knows of no moulded grenades and draws attention to the fact that the upper and lower parts of the moulds are open thus creating vents. He believes that this indicates a glassmaking operation, but leaves the final decision to glass specialists.

FIG. 1.
Bottle of blue glass, gilded and enameled, late 12th–early 13th century A.D. Obverse and reverse.

A TWELFTH CENTURY SCENT BOTTLE FROM CYPRUS

A. H. S. Megaw

The group of glass vessels from the Near East with cold-painted gold and enamel decoration fixed by muffle-firing remains so small that any addition to it is something of an event. The specimen here illustrated, which was one of the notable acquisitions of the Cyprus Museum during 1958, has the added interest that it comes from a controlled excavation and a datable context. It is a small bottle of elongated cylindrical form, which the circumstances of its discovery permit us to call a scent bottle (Fig. 1). In many fragments and incomplete, but restorable, it was found in the writer's current excavations on the "Saranda Kolonnes" mound at Kato Paphos. The granite columns which littered the mound and gave it its name had earned it the reputation of a temple site, but the excavations have shown it to contain no sanctuary, but substantial remains of a Byzantine fortress of the seventh century A.D.

The bottle is made of blue glass, rather thin and pale except in the neck and at the base, which is flattened with a low kick. Its height is 6⅝" [16.9 cm] and maximum diameter 1¾" [4.5 cm]. The ornamentation on the body is divided into two zones of unequal height by a broad band containing a zig-zag line of gold filled out with v-shaped motifs in white enamel. This dividing band is bounded by single lines of white, while double lines of white close the ornamentation at the shoulder and round the base. Each zone has a pair of roundels, on opposite faces, with a double outline in white and subdivided by vertical and horizontal lines of gold into squares, each containing a white ×. These roundels are reminiscent of the chequerboard medallions often engraved in the bottoms of Byzantine pottery bowls of the twelfth century.[1] Between the roundels of the upper zone are pairs of birds, one above the other, in gold with engraved details; similar single birds alternate with the roundels of the lower zone. In the field of both zones are little floral sprays ending in dotted rosettes. The neck is entirely covered with rather faded gilding, which ends in seven broad rays on the shoulder.

The birds and the dotted rosettes, as well as the form of the bottle and the technique employed, prove a close relationship between it and the larger fragmentary specimen found in one of the eleventh to twelfth century glass factories at Corinth.[2] On this bottle, likewise of blue glass, the birds, surrounded with sprays of

1. Ch. H. Morgan, *Corinth XI. The Byzantine Pottery*, Cambridge, 1942, Figs. 124, 209.

2. G. R. Davidson, *Corinth XII. The Minor Objects*, Princeton, 1952, p. 115, No. 750.

dotted foliage, are set within close-packed roundels, the triangular spandrels between which are filled with intricate arabesque scroll-work. Precisely the same scheme of decoration recurs on fragments of a larger blue glass bottle found within the central keep of the Paphos castle. Furthermore the crosses filling the chequer-board squares in the roundels of the scent-bottle are used on another bottle fragment from the Corinth factory, as a filling ornament in the scale pattern on the shoulder.[3] All of which suggests, if not a common source for the gilt glass of the two sites, at least a very close parentage.

The scheme of tangential roundels on the Corinth bottle and the Paphos fragments is a common form of decoration on vessels ornamented in this technique. It is found on the lower part of a similar tall bottle of blue glass in the Royall Tyler Collection,[4] again with birds in the roundels. It recurs on fragments from Egypt, though these are from a different type of vessel, the globular or ovoid flask.[5] The roundel fillings on these include a camel,[6] and while on one ovoid fragment there is a bird again, it is thought to be a bird of prey pouncing on a duck.[7]

A more clearly eastern relative of the group, a globular flask from Dvin south of Erivan in Soviet Armenia, has in one of its roundels a musician seated in oriental fashion playing a stringed instrument.[8] This may be compared with the fragment of an ovoid flask found in Iran, described as Fatimid, and now in Stockholm. In the surviving section of one of its roundels is the upper part of the figure of a dancer (?).[9]

On the other hand it is hardly possible to question the Byzantine affinities of the finest of all vessels in this small but scattered family: the bowl of purple glass in the treasury of San Marco in Venice,[10] where figures of pagan divinities occupy the roundels. On this piece the figures are rendered in white enamel with details over-painted in gold. The engraving of details through gold-painted figures on other examples, including the birds on the Paphos scent bottle, may have a chronological rather than a geographical significance. Certainly the latter technique was employed in the thirteenth century glass of Syria, such as the globular flask in the British Museum, with an inscription naming (in Lamm's opinion) the sultan who was ruling in Aleppo in 1219.[11]

Whatever the oriental connections of the engraving technique, the form of the Paphos bottle attaches it to the Corinth type, which from its distribution alone belongs rather to the Byzantine area. What lends it a particular interest is the link it provides between the roundel group and the much more elaborately ornamented bottle in The Corning Museum of Glass which is also of the elongated form.[12] On this latter, as on the Paphos bottle, the decoration is arranged in two horizontal zones, of which the upper is the larger. Here again, in the lower zone, are birds, this time unmistakable pigeons.

Of equal interest for the study of this type of glass is the fact that for the Paphos bottle we have as a firm *terminus ante quem* the year 1222, and a probability that it was already in use in 1191. Without well-located and well-dated pieces the assignment of these vessels to

3. *Corinth XII*, No. 754.

4. F. Vollbach, G. Salles and G. Duthuit, *Art Byzantin*, Paris, n.d. (1933), Pl. 42 B.

5. C. J. Lamm, *Mittelalterliche Gläser und Steinschnittarbeiten aus dem Nahen Osten*, Berlin, 1929-30, Pl. 42:3; 43:11.

6. *Ibidem*, Pl. 43:10.

7. *Ibidem*, Pl. 42:28; color Pl. A:12.

8. R. M. Dzhanpoladian, "Stekliannyi socud iz Dvina" ["A Glass Vessel from Dvin"], *Akademia nauk SSSR. Institut istorii material' noi kul'tury, Kratkie soobschchenia* 60, 1955, pp. 120-124 (in Russian).

9. C. J. Lamm, *Glass from Iran*, Stockholm, 1935, Pl. 45 B.

10. H. Peirce and R. Tyler, *Byzantine Art*, London, 1926, Pl. 94.

11. C. J. Lamm, *Mittelalterliche Gläser*, p. 122f. and Pl. 42:4.

12. *Glass from the Ancient World. The Ray Winfield Smith Collection*, Corning, 1957, No. 526.

the various centers of manufacture – and there were surely more than one – can hardly be attempted.

In 1222 Paphos together with its castle was destroyed by earthquake. Indeed there is some reason to suppose that our bottle was carried by a victim of that disaster, when, pinned beneath the fallen debris of the keep, he sought to escape along a drain. It was at the mouth of the drain which carried the sewage of the keep beneath the outer ward into the ditch that his skeleton and the vessel were found. On such a journey, which could well have begun in a privy, a scent bottle, like the lamp found with it, could be regarded as essential equipment. Unhappily the journey was to no purpose, because the drain, though commodious throughout its length, seems to have had as its only outlet into the ditch a series of narrow slits fashioned in the massive masonry facing of the outer wall. When this facing was subsequently quarried away during the demolition of the derelict castle, the skeleton of its enterprising but luckless inmate was found, and as the quarrymen rummaged for treasure among his bones they scattered our bottle about in tiny fragments. However, during the excavations which brought the fragments to light part of the bottle was found near some remains of the skull, evidently undisturbed, on the floor of the drain.

This disaster occurred only 30 years after the castle passed into Frankish hands. It is at least possible that the scent bottle, with the other analogous glass that has been found in the excavations, formed part of the equipment of the Byzantine castle in 1191. In that year the "castellum Baffes" is known to have surrendered to the followers of Richard the Lionhearted when he seized Cyprus from the usurper Isaac Ducas Commenus.

In that case only a short interval of time would separate the Paphos glass from the similar glass found at Corinth, or possibly none at all. It has been supposed that the latter was made in the factory where it was found, a factory which in consequence is believed to have carried on traditions brought to Corinth by Greek artisans previously working in Egypt. It is further claimed that when Roger of Sicily raided Corinth in 1147 the factory may have been destroyed, never to resume production.[13] If that was the case, an interval of about 40 years would have separated the factory's last products of the type here discussed from the first use of the analogous pieces at Paphos, where they were to remain in use for another 30 years.

On the other hand the published evidence does seem to warrant the suggestion that glassmaking at Corinth continued into the second half of the twelfth century. It is true that the latest coins found in quantity, in the more important of the two factories excavated there, were those of the emperor reigning at the time of the Norman raid. But as more coins were found of this emperor—Manuel I (1143-1180)—than of any other,[14] it would be surprising if all these accumulated in the first four years of his reign. It may be then that the factory resumed business after the ordeal of 1147, and in that case the Paphos glass, which was probably in use in 1191, could be contemporary with the later Corinthian output.

That the glassmakers of Corinth made all the glass found in and around their factory, including the vessels with gilt and enamel decoration, is a reasonable supposition, but it is not an established fact. The discovery in Cyprus of approximately contemporary specimens of this still rare type of glass is suggestive of other possibilities, including importation to both places from a single source elsewhere. But such speculations will remain premature until further specimens from controlled contexts are forthcoming.

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13. G. R. Davidson, "A Mediaeval Glass-Factory at Corinth," *A.J.A.*, XLIV, 1940, p. 323f.; *Corinth XII*, pp. 83, 88.

14. *A.J.A.*, XLIV, 1940, p. 299.

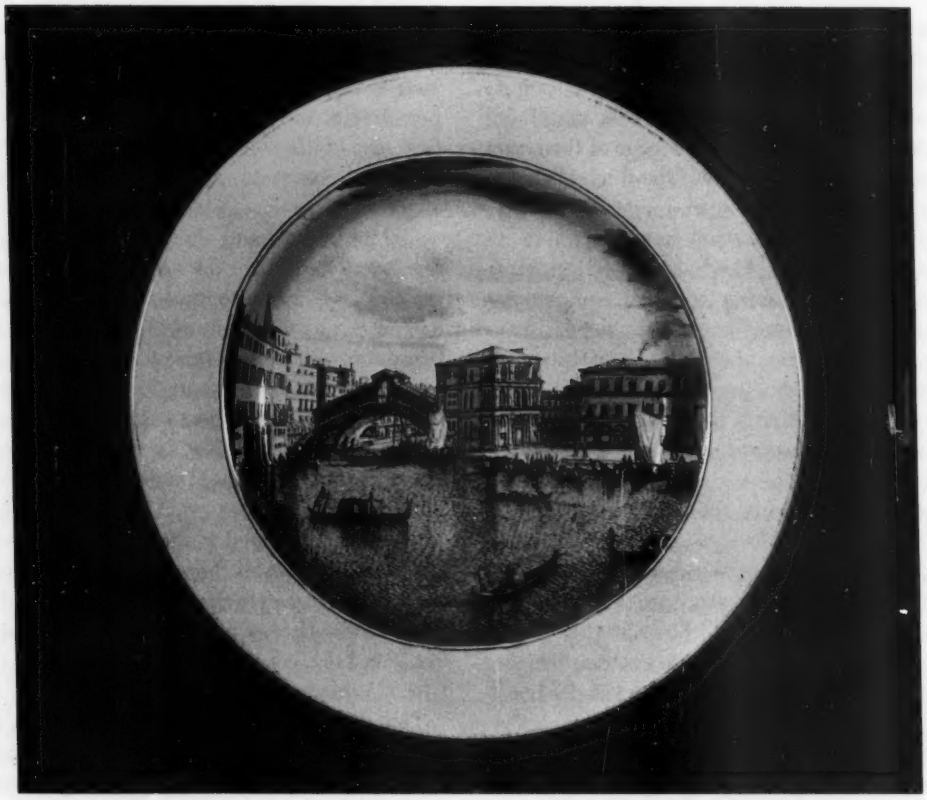

FIG. 1. Lattimo *plate with view of Rialto Bridge, copied from Visentini's engraving "Pons Rivoalti ad Occidentem" (Part I, No. VII). Diam. 8⅝ in. Victoria and Albert Museum.*

SOUVENIRS OF THE GRAND TOUR

R. J. CHARLESTON

THE *lattimo*[1] plates which form the subject of this essay have long been known as forming a curious group having little in common with any other type of glass. Robert Schmidt, in the second edition of *Das Glas* (1922), considers them the most artistic of all the Venetian painted glass, and states that they can be securely dated between 1738 and 1741. W. B. Honey in his *Glass: a Handbook* . . . (1946), makes this explicit (p. 62): "The large plate (No. 5272-1901) is one of a series painted in red monochrome with views of Venice copied from prints by G. B. Brustolone after Canaletto. The view of the Grand Canal shown on this plate includes the Church of S. Simeone Piccolo, which was finished in 1738; since this and other similar plates were brought to England by Horace Walpole in 1741 it may be concluded that they were made between 1738 and this date . . ." The present article will do nothing to change this essentially correct picture, but will seek to fill in some of the blank patches, rectify a few misplaced lines, and consolidate the whole.

The basis of the tradition which connects these plates with Horace Walpole is the *Description of the Villa of Horace Walpole . . . at Strawberry Hill* . . . (Strawberry Hill Press, 1774), where on p. 9, in a passage describing the China-Room, occurs the following item: "Two dozen plates of Venetian glass; each plate has a different view of Venice, drawn in red." These plates were sold in the Twelfth Day's sale[2] at

1. Opaque-white glass. The word was known in England at least as early as 1711 (*New Curiosities in Art & Nature* . . . by the Sieur *Lemery* . . . London). The opacifying agent used for these plates was apparently an arsenic compound. The piece illustrated in Fig. 8 has been analyzed by Mr. Rooksby, of the General Electric Company, who reports as follows:

"Turning to the other specimens you sent us, they are three in number, two described as of Venetian origin and another which you sent direct much later on. All we have done on these is to look at the nature of the opacifying material by x-rays, and we have not attempted any chemical work on the tiny fragments. The findings can be summarised as follows:

Description of Specimen: Venetian Dish, 1741, T. H. Clarke, Esq.

Identity of opacifying agent: Lead oxyorthoarsenate $3Pb_3(ASO_4)_2$. PbO (substance defined by hexagonal crystal structure, lattice parameters $a_o = 10.05$, $c_o = 7.38$Å.

Remarks: This substance appears in modern lead-arsenic enamels. It has a characteristic crystal structure akin to that of apatite; compare the constitution of calcium fluorapatite $3Ca_3(PO_4)_2$. CaF_2."

2. *A Catalogue of the Classic Contents of Strawberry Hill* . . . (auctioneer Mr. George Robins, the sale from April 25, 1842), "Lot 41. Six extremely rare and curious old Venetian glass dessert plates, the ground is white and the Landscape painting on each is in red,

Strawberry Hill (May 7, 1842), Lots 41 to 44, each lot containing six plates. A second source of the tradition was the *Catalogue* of the Slade Collection at the British Museum,[3] in which were two of the plates (Figs. 2 and 4 here) described as forming "part of a set that were formerly in the Strawberry Hill Collection, at the sale of which they were sold for ten shillings each to the late Mr. Bernal, at whose sale they realized £10 each." This statement was not wholly correct, as we shall see, but it legitimately sufficed to connect the plates with Strawberry Hill. In fact, the plates were sold to a certain W. M. Smith and to "Zimmerman," each buying two lots for £7.[4] That Bernal subsequently bought two plates from one or the other of these men seems certain from the Sale Catalogue of his own collection, where "A pair of Venetian plates, with views of San Giorgio Maggiore and the Arsenal, in brown" are described as "*From Strawberry Hill.*" These were bought by Felix Slade, Esq., for £20.[5] Coming a mere 13 years after the Strawberry Hill sale, the attribution in the Bernal *Catalogue* must be accepted as correct. The British Museum plates are thereby firmly bound to Horace Walpole. But what of the rest of the plates in the series? And what of the date 1741? Horace Walpole was in Venice that year, but does it follow that he purchased them then? The first mention of them is in 1774, and he might very easily have bought them at any date before that. The question of date becomes even more pressing when it is borne in mind that the prints by Brustoloni after Canaletto, from which the plates were supposed to have been copied, were in fact published in 1763.[6]

The answer to the first of these questions also helps towards settling the matter of date. R. Schmidt, in the first edition of *Das Glas* (1912, p. 84) mentions two pieces in the Emden Collection, one with a view of the Rialto Bridge, the other with the Church of SS. Giovanni e Paolo;[7] and one from the Lanna Collection with a view of S. Maria della Salute, in the Berlin Kunstgewerbe Museum.[8] In the second edition (1922, p. 86) he lists one (that with SS. Giovanni e Paolo) in the Pazaurek Collection, Stuttgart; in Berlin (then in the Schlossmuseum) one with the Rialto Bridge and one with S. Maria della Salute, from the Lanna Collection; and in the Moritzburg Museum, Halle an der Saale, one with a view of the Riva. This last piece was published by K. Freyer in 1914,[9] where the suggestion was apparently first made in print that the scenes were copied from Brustoloni's engravings: Freyer also mentioned that there was a similar plate in the Rosenheim Collection, but unfortunately did not specify the subject with which it was decorated. The

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the Views are in Venice and every plate has a different subject." *Aedes Strawberrianae* . . . , London (n.d. but presumably also 1842) gives the names of the purchasers and the prices paid.

3. Alexander Nesbitt, *Catalogue of the Collection of Glass formed by Felix Slade, Esq.* F.S.A. London, 1871, Nos. 387 and 388 (p. 74).

4. *Aedes Strawberrianae* . . .

5. *Catalogue* of the Bernal sale (Christie and Manson), London, 1855, 24th day, April 19, Lot 3212. A copy of this *Catalogue* in the Victoria and Albert Museum bears the manuscript note: ". . . on the dispersion of that collection (i.e. Strawberry Hill) in 1842 they were sold in 4 lots of 6 each the average produce of each lot being £3.10.0. A comparison of these prices with present proffers material for serious reflection," a remark not inapposite to our own day.

6. *Prospectum aedium viarumque insigniorum urbis Venetiarum . . . 1763 apud Ludovicum Furlanetto,* and *Vedute della citta di Venezia 1763 apud Ludovicum Furlanetto*—see A. Calabi, *La Gravure Italienne au XVIIIe Siècle,* Paris, 1931, p. 46.

7. *Sammlung Hermann Emden, Hamburg,* Lepke's Kunst-Auctions Haus, Berlin, sale November 3-7, 1908, Lot 1048 (Pl. 80).

8. Ill. *ibid.*, Fig. 49. See *Sammlung des Freiherrn Adalbert von Lanna, Prag,* Lepke, Berlin, March 21-28, 1911, Lot 748 (Pl. 63). This piece is here given as coming from the Magniac Collection—see *Catalogue of the Renowned Collection of . . . the late Hollingworth Magniac, Esq* . . . , Christie, Manson and Woods, London, Fifth day, July 7, 1892, Lot 562, "A Pair of Opaque White Plates, painted in red ochre, with views in Venice. 9 in. diameter. From the Strawberry Hill Collection." See n. 14 below.

9. "Die Kunstgewerbliche Sammlung des Städtischen Museums zu Halle a.S.," *Cicerone,* June, 1914, pp. 399-411, especially p. 406.

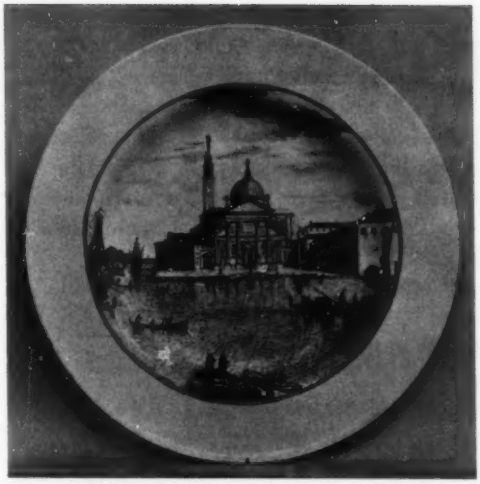

FIG. 2. Lattimo *plate with view of S. Giorgio Maggiore (No. 5). Diam. 9 in. British Museum. By permission of the Trustees.*

plate which had been in the Pazaurek Collection passed ultimately to the Prague Museum (Fig. 6).[10] On the Continent, therefore, the position might be summarized as follows:

1. SS. Giovanni e Paolo. Prague, ex-Pazaurek Collection, ex-Emden Collection (Fig. 6).

2. Rialto Bridge. Schlossmuseum, Berlin, probably ex-Emden Collection.[11]

3. Entrance to Grand Canal. Schlossmuseum, ex-Lanna Collection, ex-Magniac Collection.

4. Riva. Moritzburg Museum, Halle (Fig. 14).

There is no difficulty in seeing how these pieces should have reached the Continent, mainly

10. Kunstgewerbliches Museum . . . in Prag, *Glassammlung Pazaurek . . . Führer,* by F. X. Jirik, Prague, 1932, p. 8.

11. It is curious, however, that Schmidt, who mentions both pieces from the Emden Collection in his 1912 edition, should in the 1922 edition only mention the Pazaurek plate as coming from the Emden sale. No illustration of this piece appears to have survived, and it is possible, in the light of what follows, that the scene represented was not that of plate No. 8 below, but that of the Bridge painted from the side, as in No. 27 – see Appendix. It is possible, however, that the Emden plate is that in the Victoria and Albert Museum (No. 8).

FIG. 3. *Etching by Luca Carlevaris, No. 6 from the series* Le Fabriche, e Vedute di Venetia *(1703). Victoria and Albert Museum. Crown Copyright.*

Germany, in view of the name of the second buyer at the Strawberry Hill sale[12] (one piece, however, came to the Lanna Collection from another source).[13]

In England, at the time when the author of the present article came to take up the subject, the following plates were known to exist in public and private collections:

5. S. Giorgio Maggiore. British Museum, Slade Collection, ex-Bernal Collection, ex-Strawberry Hill Collection (Fig. 2).

6. The Arsenal. British Museum, Slade Collection, ex-Bernal Collection, ex-Strawberry Hill Collection (Fig. 4).

7. S. Simeone Piccolo. Victoria and Albert Museum (5272-1901), ex-Jermyn Street Collection. Stated to have come from Strawberry Hill.

8. Rialto Bridge. Victoria and Albert Museum, Buckley Collection (C. 185-1936). (Color Plate, Fig. 1, p. 62.)

9. S. Simeone Piccolo. National Museum of Wales (reg. 87).

10. Grand Canal with Pescheria and Palazzo Pisani. National Museum of Wales (reg. 86).

12. Copies of the Strawberry Hill Sale Catalogue were to be had of "M. I.A.G. Weigel, of Leipsic" – see P. Merritt, *"An Account of Descriptive Catalogues of Strawberry Hill and of Strawberry Hill Sale Catalogues,* Boston 1915, p. 51.

13. See n. 8 above.

FIG. 4. Lattimo *plate with view of the Arsenal (No. 6). Diam. 9 in. British Museum. By permission of the Trustees.*

FIG. 5. *Etching by Luca Carlevaris, No. 63 from the series* Le Fabriche, e Vedute di Venetia *(1703). Victoria and Albert Museum. Crown Copyright.*

11. S. Maria della Salute. Collection of T. H. Clarke, Esq., M.B.E. (Fig. 8).

12-27. Sixteen plates with various views, at The Vyne, near Basingstoke, Hampshire (Figs. 10 and 12).

Subsequently another plate was found at Aynhoe Park, near Bicester, the seat of the Cartwright family and the repository of a fine collection of glass.

28. Piazzetta looking towards the Molo. Aynhoe Park, ex-Magniac Collection.[14]

A difficulty immediately presented itself here, for in the first place, Horace Walpole only possessed 24 of these plates; in the second, the *Description of . . . Strawberry Hill* and the Sale Catalogue are both positive on the point that each plate is decorated with a different view of Venice, whereas in the above list, apart from the set at The Vyne, there are at least two duplications. The first objection is easily cleared up by the hypothesis that the set at The Vyne was a separate one, made at the instance of John Chute, who became the owner of the house and was an intimate of Horace Walpole's. The second objection is not so easily disposed of. Whereas, it is true, there is one instance of duplication in the sixteen plates at The Vyne, here we have to contend with two duplications among the eleven remaining plates, presumably of a set which was twice described as including 24 different views of Venice.

A solution seemed to be obtainable only by pursuing the histories of the plates not already traced to collections of old standing—namely, Nos. 8-11 of the above list. No information was forthcoming about the prior history of the piece from the Buckley Collection (No. 8), but those in the National Museum of Wales (Nos. 9 and 10) were given by the late F. E. Andrews, who obtained them from Messrs. Rochelle Thomas, who in turn bought them at the sale of the contents of Clumber in 1937. Recourse to the *Catalogue* of this sale showed that among a great deal of general pottery and porcelain were "Nine plates painted with Venetian scenes in red."[15] The plate in the possession of Mr. Clarke was traced to the same source, and ultimately

14. This plate has on the reverse a label, inscribed in a 19th century hand: "Formerly Magniac Collection, bought from Dey *(sic)* Munich." This note explains how the plate once in the Lanna Collection came to be from the Magniac Collection – see n. 8 above.

15. Christie, Manson & Woods, *Catalogue of the Remaining Contents of the Mansion of Clumber,* October 19, 1937, Lot 76.

five more examples were run to earth in the possession of Mr. Andrews' sons, Messrs. A., W. and P. Andrews.[16] These pieces may be listed as follows:

29. Church of SS. Giovanni e Paolo.
30. Church of the Carità (Fig. 16).
31. View towards S. Chiara and the end of the Grand Canal.
32. View eastwards from the Rialto Bridge.
33. Molo looking towards the Libreria.

Taking the eight plates from this series, we see that No. 31 corresponds with one in the series at The Vyne, while Nos. 9 and 29 have identical views with Nos. 7 and 1, both *ex hypothesi* from Strawberry Hill. It is therefore apparent that there are duplications within this set with both the plates at The Vyne and those which may be supposed to come from Strawberry Hill. The solution therefore suggests itself that there must in fact have been a *third* set of these plates, and when we come to look more deeply into the evidence, this supposition becomes a certainty.

Clumber was the seat of the Dukes of Newcastle. The architect was Stephen Wright, who was apparently busy with the house in 1770[17], long after the point in time which interests us here. The building of a house there had obviously been projected some time before this date, for Sir Alexander Dick in a letter to Joseph Spence, tutor and friend of the second Duke of Newcastle, mentions a 'jaunt thither' in a letter of 1765; and an inventory of 1760 exists.[18] Even this date, however, is too far removed from 1741 to concern us. It is evident that the plates at Clumber, if indeed they were made at the same time as the set at Strawberry Hill, must have been brought there from some other source. The clue to the puzzle lies in the identity of the owner of Clumber. Before he was created second Duke of Newcastle-under-Lyme, in 1768, Henry Fiennes Clinton (1720-94) was 9th Earl of Lincoln. He had married in 1744 Catherine Pelham, daughter of the Duke of Newcastle, who was also his uncle, and it was by virtue of this connection that on the first Duke's death he succeeded to the title under a special patent of 1756.[19] Before his mar-

FIG. 6. Lattimo *plate with view of SS. Giovanni e Paolo (No. 1). Diam. app. 9 in. Museum of Industrial Art, Prague.*

FIG. 7. *Engraving by Antonio Visentini, Part III, No. 1. Horace Buttery, Esq.*

16. Three plates were sold from the F. E. Andrews Collection at Sotheby's on May 2, 1952, Lot 5, but were bought by A. Andrews, and thereby presumably were rejoined to the remainder of the set.

17. *Country Life*, XXIV, 1908, p. 359.

18. Joseph Spence, *Anecdotes* (ed. S. W. Singer), London, 1858, p. 368. See, however, n. 102 below.

19. *Dictionary of National Biography, s.v.* He succeeded as 9th Earl in 1730, was Lord of the Bedcham-

FIG. 8. Lattimo *plate with view of S. Maria della Salute and the Grand Canal (No. 11). Diam. 9 in. T. H. Clarke, Esq., M.B.E. Crown Copyright.*

riage, however, he had had other quarry in view.

In October, 1740,[20] writing from Florence, Henrietta Louisa, Countess of Pomfret, re-

FIG. 9. *Engraving by Antonio Visentini, Part I, No. VI. Horace Buttery, Esq.*

cords: ". . . Lord Lincoln is here; a very lively, sensible young man. He goes in a fortnight to Rome; . . . Mr. Walpole and Mr. Dashwood stay the winter; and these, with Lady Walpole and Mr. Mann, are all the company I am likely to see for some months . . ." Horace Walpole, for his part, wrote: "Lady Pomfret has a charming conversation once a week. She has taken a vast palace and a vast garden, which is vastly commode, especially to the cicisbeo-part of mankind, who have free indulgence to wander in pairs about the arbours. You know her daughter: Lady Sophia is still, nay she must be, the beauty she was . . ."[21] This was Lady Sophia Fermor, and with her Lord Lincoln fell deeply in love. His Grand Tour was now improvised to coincide as far as possible with her itinerary across Italy. When the Pomfrets moved to Rome, Lord Lincoln returned from Naples to Rome —"I hear," wrote Lady Pomfret on March 17, 1741, "that lord Hervey's eldest son is here; that lord Lincoln comes from Naples tonight or tomorrow . . ." On April 1, 1741, the Pomfrets took tea with Lord Lincoln, and on the 23rd he took them to "the finest concert Rome could afford." On May 8, "my lord Lincoln, Mr. Pitt, Abbé Grant, my lord Pomfret, my daughters, and myself, set out in two coaches to see Albano . . . ," and on the 12th, after a dinner to-

ber and Lord-Lieutenant of Cambridgeshire 1742; K.G. 1751 (or 1752 according to Collins *Peerage of England* [ed. Brydges, 1812], II, p. 214 who adds that he was a Fellow of the Royal Society). His portrait, by Hoare of Bath, is mentioned in the Vertue *Notebooks* III, p. 161 (see also *Country Life, l.c.*).

20. This and the following letters of Lady Pomfret are quoted from *Correspondence between Frances, Countess of Hartford . . . and Henrietta Louisa, Countess of Pomfret, between the Years 1738 and 1741*, London, 1805, II, pp. 160, 291; III, pp. 38, 92, 123, 128, 143, 145-6, 176, 182, 207, 209, 221. Henrietta Louisa Jeffreys married in 1720 Thomas Fermor, second Baron Leominster, created Earl of Pomfret 1721 (died 1753). She posed as a connoisseur of the arts, and excited the ridicule of Horace Walpole, who commented on her "paltry air of significant learning and absurdity." She presented to Oxford University the marbles, part of the Arundel Collection, which had been in her family, and received the thanks of the University in 1755. Of this collection Walpole wrote to Montagu in 1736: "we saw Easton Neston . . . where in an old green house is a wonderful fine statue of Tully haranguing a numerous assembly of decayed emperors, vestal virgins with new noses, Colossus's, Venus's, headless carcases and carcaseless heads . . . " — see *D.N.B.*, s.v. and *Letters of Horace Walpole* (ed. Mrs. Paget Toynbee), London, 1903, I, p. 14 (letter to George Montagu, dated May 20, 1736).

21. *Letters of Horace Walpole*, I, pp. 75-6 (to the Hon. Henry Seymour Conway, dated Florence, July 9).

gether the previous evening, there was a similar expedition to Frascati. The next day they dined together at Lord Lincoln's, and on the 14th "In the evening lord Lincoln came to take leave of us, being to set out to-morrow for Reggio . . ." The separation, however, was not for long, for on May 28 Lady Pomfret, now in Bologna, "had a visit from lord Lincoln, who, I forgot to tell you, yesterday arrived here from Reggio . . ." In Bologna there were further diversions. "This morning, betimes, the signora Gozzadini & Sophy, in one post-chaise, the marchesa Beccatelli and marchesa Guido Popoli in another, I and Charlotte in a third, lord Lincoln & my lord in a fourth . . . set out to pay our devotions to the Virgin at the Monte di Guardia . . ." When the Pomfrets went on to Venice, arriving on June 5, Lord Lincoln had preceded them by a day. Lady Pomfret writes on the 6th: "The English here are lord Lincoln (who arrived the night before us, having set out in the morning before us from Bologna), lord Elcho, Mr. Dashwood, and Mr. Naylor; besides Mr. Whitehead[22] and Mr. Shute, whom we left at Florence . . ." On the 10th of the same month she records the presence of Horace Walpole: "This afternoon we had a visit from Mr. Walpole, who arrived yesterday from Reggio."

Here we must leave the Pomfrets, to take up another thread of the story. In his *Short Notes of my Life*,[23] Horace Walpole gives the following account of his Grand Tour: "I had continued at Cambridge . . . till towards the end of 1738, and did not leave it in form till 1739, in which year, March 10th, I set out on my travels with my friend Mr. Thomas Gray, and went to Paris . . . Mr. Gray and I went by Lyons to Turin, over the Alps, and from thence to Genoa, Parma, Placentia, Modena, Bologna, and Florence. There we stayed three months, chiefly for the sake of Mr. Horace Mann, the English Minister . . . we went to Rome in the end of March, 1740, to see the election of the new Pope, but the Conclave continuing . . . we (after an excursion of Naples) returned in June to Florence, where we continued in the house of Mr. Horace Mann till May of the following year, 1741, when we went to the fair of Reggio.[24] There Mr. Gray left me,[25] going to Venice with Mr. Francis Whithed and Mr. John Chute, for the festival of the Ascension . . .

"I went to Venice with Henry Clinton, Earl of Lincoln, and Mr. Joseph Spence, Professor of Poetry, and after a month's stay there, returned with them by sea from Genoa . . ." The story of Walpole's quarrel with Gray, suppressed in this passage, has been told elsewhere,[26] and the details of Walpole's journey across Italy are of no direct concern here, except that it may be noted that he and Gray had met with Lord Lincoln and Spence at Turin in the earlier part of their journey.[27] By June 6th, Lord Lincoln, John Chute and his cousin Francis Whitehead had arrived in Venice, the two last presumably in company of Gray. Walpole had arrived by the 9th of the same month,[28] and on June 17, Lady Pomfret writes: "Mr. Walpole, Mr. Whitehead, and Mr. Shute, came to take leave of us, for they remain at Venice.

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22. Francis Whitehead (b. 1719), of Southwick Park, Hampshire, a cousin and intimate friend of John Chute – see *Letters of Horace Walpole*, I, p. 103 n.; R. W. Ketton-Cremer, *Horace Walpole*, London, 1940, p. 74.

23. Reproduced *Letters of Horace Walpole*, I. p. xxxiv ff., the passage quoted being from pp. xxxv-xxxvi.

24. Walpole apparently wrote to Mann from Reggio on May 4, although the letter is missing. Mann, writing on the 2nd, apparently expected him to have arrived there on the 3rd (*Horace Walpole's Correspondence with Sir Horace Mann* [ed. W. S. Lewis, Warren Hunting Smith, and George L. Lam], London, 1955, Vol. I, pp. 34, 36).

25. L. Whibley. "The Foreign Tour of Gray and Walpole," *Blackwood's Magazine*, June, 1930, pp. 826-7, suggests that Walpole and Gray parted company in Venice, not Reggio. This, however, is not proven, and seems improbable on the existing evidence.

26. L. Whibley, *loc. cit.*, p. 818 ff.

27. *Letters of Horace Walpole* (ed. Toynbee), I, p. 43 (letter of November 11, 1739, addressed to R. West from Turin: "There are three or four English here; Lord Lincoln, with Spence, your Professor of Poetry").

28. See Lady Pomfret's letters of June 6 and June 10, quoted above.

Lord Lincoln took leave, as setting out tonight for Padua . . ." The following day they caught up with him at Padua, and two days later they were saying goodbye to him again at Verona.[29] He must, however, have returned to Venice, for in a letter to Mann written from Venice probably on July 5th, Walpole says: "Lord Lincoln is this instant come in, and desires his compliments to you . . ."[30] Spence's itinerary, preserved among his papers at the British Museum,[31] shows that they stayed in Venice from June 5th until July 12th, then proceeding westwards via Padua, Vicenza, Verona and Mantua and heading for Genoa. It had earlier been decided that Walpole should go with them,[32] and he writes from Genoa on July 19th: ". . . You will laugh to hear how we shortened the tediousness of the last day; as Lord Lincoln rode, Mr. Spence and I went together in the chaise, and employed ourselves the whole day in counting the number of loaded mules &c. that we met on the road . . . Lord Lincoln, I told you, rode most of the way, *pour se dissiper*. He is quite melancholy, and one day that we went together, talked to me the whole time of Lady Sophia. He says he is determined not to engage with her again on his return, unless he can settle his affairs so as to marry her . . ."[33] Chute and Whitehead probably outstayed Walpole and Lincoln in Venice. In a letter to Mann probably to be dated June 29th, Walpole writes: "The Chutes are in the house with me, so we never want company; that is his, for Whitehead is as silent as ever. They will be with you in a fortnight or three weeks."[34] This expectation, however, was not fulfilled, for they do not appear to have left Venice until about July 18th, their delay on the road to Florence giving Mann not a little uneasiness.[35]

That the three pairs – Walpole and Gray (at this point, however, estranged from each other), Lincoln and Spence, Chute and Whitehead – were in Venice for several weeks in each others' company is thus demonstrable, but the significance of this conjunction becomes more apparent when the characters of the men are considered. Of Walpole there is no need to speak. Gray's tastes at this point hardly count, since his views would no longer be conveyed to Walpole in their estrangement.[36] Lincoln was apparently not a man of lively intelligence,[37] but as a lordly traveller on the Grand Tour, he no doubt felt it incumbent on him to bring back evidence of his connoisseurship.[38] He had in

29. *Correspondence, III*, pp. 238, 240 and 244.

30. *Correspondence with Sir Horace Mann*, I, p. 85, letter dated after July 3rd by the mention of the death of the Queen of Sardinia.

31. Egerton MSS. 2235.

32. Mann wrote to Walpole on June 10: "I am delighted to hear you have joined company with Lord L(incoln), as I was in pain about your travelling alone." (*Correspondence*, I, p. 61). Walpole had originally intended to set out homeward on July 3rd, but he deferred his departure until the 12th (letters from Mann dated June 24, July 15 and July 23, *ibid.*, pp. 72, 88 and 94).

33. *Correspondence with Sir Horace Mann*, I, p. 91.

34. *Ibid.*, I, p. 74.

35. *Ibid.*, I, p. 101, Mann to Walpole (August 6): "Where can Mr. Chute and Whitehead be? . . . they departed from Venice last Saturday was a fortnight." They eventually arrived on August 31, having been over a month on the road. See *ibid.*, I, pp. 97, n. 4; 106; 108.

36. He had, however, the opportunity, extended over a period of several months, of making his tastes felt. He was, of course, actively interested in antiquities (see Ketton-Cremer, *op. cit.*, n. 22, pp. 69-70), but he also took an interest in the "virtù" of later periods, making careful notes in picture galleries as he went. These no doubt later served him in writing an Appendix on the lives of painters, contributed to C. A. Du Fresnoy's *The Art of Painting* (1783).

37. On July 8, 1741, Horace Mann wrote to Walpole: "I make account you leave Venice tomorrow, and I am vastly glad to hear you have got such good company as I was always uneasy at your travelling alone. What do I say good company? I am afraid his Lord (ship and) Sp(ence) will be very dull, but, however, they will take care of you" (*Correspondence with Sir Horace Mann*, I, p. 86). Although it is true Lincoln was at this stage sunk in his love-affair with Lady Sophia Fermor, he does not appear to have made a good impression on Mann, who later refers to him as "that strange stupid stammerer" (*l.c.*, p. 132).

38. A consignment of Lord Lincoln's effects was sent home from Florence. Mann writes on April 22, 1742: ". . . . and don't forget to tell me whether you have found Lord Strafford's box of scagliola, which was sent with Lord Lincoln's things . . ." (*l.c.*, p. 396).

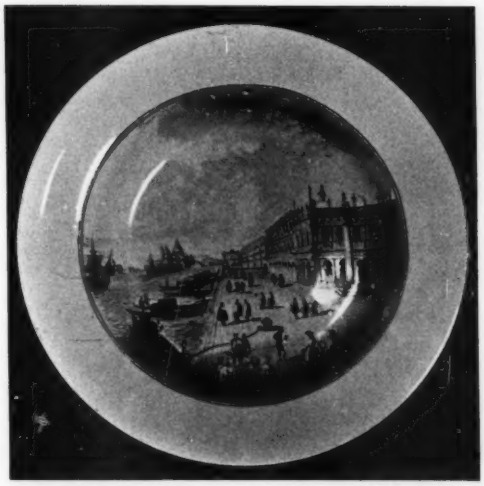

FIG. 10. Lattimo *plate with view of the Molo looking towards the Libreria (No. 21). Diam. app. 9 in. National Trust, The Vyne. Photograph Hants. and Berks. Gazette.*

this an accomplished mentor. Joseph Spence (1699-1768), a Fellow of New College, Oxford, and a clerk in holy orders, had been elected to the Chair of Poetry, in succession to Thomas Wharton, in 1728. A pleasant and reliable man, he was a natural choice as tutor for a young and high-spirited gentleman setting out on his Grand Tour. Before he embarked with Lord Lincoln, he had accompanied the Earl of Middlesex and a Mr. Trevor in the same capacity. Since 1732 he had been gathering materials for his book on classical mythology, entitled *Polymetis* and ultimately published with numerous plates in 1747.[39] With this publication in view, no doubt he took the keenest interest in the classical antiquities which he met with on his way. More important, he was interested in the contemporary arts. His letters to his mother and some memoranda of his journey are preserved in the British Museum, and these record some of his interests. In an account "For Virtù," for example, apparently kept in Rome, he notes an "Enam'd. snuff box," which cost 36

39. See *Dictionary of National Biography, s.v.*

FIG. 11. *Engraving by Antonio Visentini, Part II, No. 12. Horace Buttery, Esq.*

crowns and 90 Baycocks.[40] Some of his other purchases are even more to the purpose, as will be seen later. As to his taste, although Horace Walpole in later years decried his powers as a critic,[41] in this year of 1741 he could write to him: "I assure you in my own proper person that I shall have great pleasure, on our meeting in England, to renew an acquaintance that I began with so much pleasure in Italy. I will not reckon you among my modern friends, but in the first article of virtù: you have given me so many new lights into a science that I love so much, that I shall always be proud to own you as my master in the antique . . ."[42] This regard was assuredly not diminished by the fact that, some three months later, just before their com-

40. *Loc. cit.*, n. 31, fol. 172. This amount equals approximately £9/4/6d. sterling at that date—see (Thomas Nugent), *The Grand Tour*, London, 1749, Vol. III, p. 55, for the Roman coinage and its equivalents.

41. "The Prometheus is a glorious picture, the eagle as fine as my statue. Is not it by Vandyck? The Duke told me that Mr. Spence found out it was by Titian – but critics in poetry I see are none in painting" (May 30, 1763 – *Letters* (ed. Toynbee), V, p. 336). Seventeen years later his remarks become even more disparaging: "As I knew Mr. Jos. Spence, I do not think I should have been so much delighted as Dr. Kippis with reading his letters. He was a good-natured, harmless little soul, but more like a silver penny than a genius. It was a neat, fiddle-faddle bit of sterling, that had read good books and kept good company, but was too trifling for use, and only fit to please a child." (*ibid.*, XI, p. 175, letter dated May 19, 1780.)

42. *Letters* (ed. Toynbee), I, p. 94, letter dated from Florence, February 21, 1741.

ing together in Venice, Spence was largely instrumental in saving Walpole's life when he lay seriously ill at Reggio.[43]

Of the third pair, John Chute and Francis Whitehead, Chute was the dominant personality. Whitehead, though a devoted and sensible man, was exceptionally reserved and silent, and in consequence does not emerge very distinctly from the picture of these personalities given us by the correspondence.[44] John Chute appears to have been a more striking character. Although outwardly seeming affected,[45] he was a humorous, loyal and sensible friend, who endeared himself to Walpole, and to Mann, in whose house he stayed for a long time during his sojourn in Florence.[46] More relevant here, however is his interest in the arts. A collector[47]

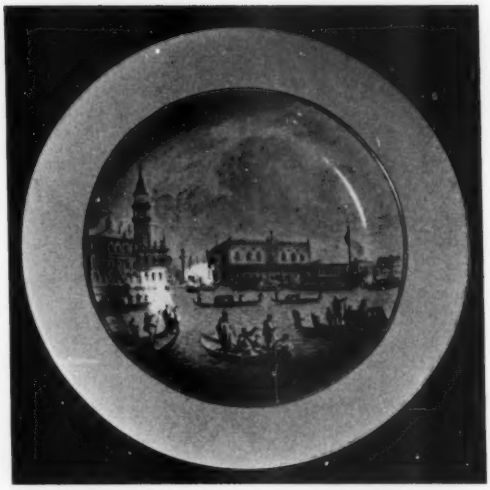

FIG. 12. Lattimo *plate with view of Doge's Palace and Bucentaur in foreground (No. 19). Diam. app. 9 in. National Trust, The Vyne. Photograph Hants. and Berks. Gazette.*

of prints, and probably also of drawings, he was largely instrumental in Walpole's obtaining a sculpture of an eagle which was found within the precincts of the baths of Caracalla in 1742, and which was later to be one of the treasures of Strawberry Hill.[48] He rendered a similar service in procuring a Domenichino for Sir Robert Walpole.[49] On his return to England, he dabbled in architecture, being often consulted by Horace Walpole[50] in matters affect-

43. *Ibid.*, n.l. See also *Correspondence with Sir Horace Mann*, I, p. 51, letter from Mann dated May 30, 1741.

44. See above, n. 22. Some lights on his character are thrown by Mann's letters to Walpole—e. g., *Correspondence with Sir Horace Mann*, I, p. 283 (January 21, 1742: "Both he (Chute) and Whitehead are vastly good"); although normally so reserved, he was capable of passionate feeling – *ibid.*, I, p. 146 (September 24, 1741: "Whitehead . . . really worked himself into a passion by giving me an account how formerly at Leghorne he was forced to hear a thousand most impertinent things about 220 (i.e. Walpole)"); I, p. 491 (July 22, 1742: "The Chutes send their best compliments; the young one is in love"). Walpole in a letter to Mann of April 1, 1751 (*Correspondence* (ed. Toynbee), III, p. 41) describes Chute's intense distress at the death of Whitehead "that best of hearts." His portrait by Rosalba was at The Vyne – see *Gray's Letters* (ed. D. C. Tovey), I, London, 1900, p. 144, n. 3. Gray's letters contain numerous references to him.

45. The ordinary fox-hunting squires appear to have despised him for his affectation. Mann writes on August 27, 1741: "The silent company dined here the day before yesterday and as most of 'em are downright Johns (an opprobrious term for an Englishman in the Mediterranean), Mr. Chute was convinced they despised him much; they disliked his fan extremely." (*Correspondence with Sir Horace Mann*, I, pp. 116-117).

46. See above, n. 44. For his character, see also *Correspondence with Sir Horace Mann*, I, pp. 112, 124, 283, 301, etc. etc. *Letters of Horace Walpole* (ed. Toynbee), III, pp. 316-317. A portrait engraving of him by James Heath is illustrated *Correspondence with Sir Horace Mann*, II, 1955, facing p. 243.

47. *Correspondence with Sir Horace Mann*, II, p. 284.

48. *ibid.*, III, p. 79 (letter to Mann dated July 26, 1745, O.S.: "I don't know what to say to Mr. Chute's eagle . . . I can depend upon his taste . . .").

49. *ibid.*, I, pp. 167, 227, 257, 267, 313, 325, 339. He also acted for Walpole in the matter of a copy of Guido Reni's *Pallione (ibid.*, I, p. 118 and n. 25), and his enthusiasm for this master's work is to be seen in Mann's account of his reactions to the head of *Niobe* discovered by Mann (ibid., I, pp. 138 and note; 162). Mann also consulted him about Sir Francis Dashwood's vases *(ibid.*, I, p. 412; see p. 76).

50. See W. S. Lewis, "The Genesis of Strawberry Hill," *Metropolitan Museum Studies*, New York, 1934, V, p. 58 ff. Chute formed, with Richard Bentley and himself, Walpole's *Committee of Taste*. Walpole wrote of him in 1776: "Chute was my oracle in taste . . ." *(ibid.*, p. 63). His meticulous architectural drawings are illustrated *ibid.*, Figs. 19 and 30.

FIG. 13. *Engraving by Antonio Visentini, Part I, No. XIV. Horace Buttery, Esq.*

ing Strawberry Hill, and sometimes even designing for it. He made designs for Hagley,[51] although they were never carried out, and his crowning achievement as an architect must be considered the remodelling of the main staircase at his own house, The Vyne.[52]

In a coterie of Grand Tourists with such pronounced interests in the arts, it would not be surprising that, among many other things, they should be captivated by the glass-industry flourishing across the water at Murano. Spence, writing home to his mother on June 16th, says: "I have been this morning purchasing some Household Goods for us, no less than Handles, for a Dozen Desert Knives & Forks. Among all the Noble Rich Marbles used by the Old Romans . . . the most esteem'd is what they call *Lapis Lazuli* . . . They have, of late years, found out a way of imitating this, at Venice, & tis of this Imitation that our Knives & Fork Handles are made. I have been thinking all this morning, how pretty they must look with your Cheyne Plates . . ."[53] For these he paid £1.[54] These glass handles in imitation of lapis lazuli were a popular product with the English tourists of the time. Lady Pomfret writes on June 14th: "When we had dined, we went in our gondola to Murano, another little city in the Lagunes. Here they make looking-glass; . . . as well as the false lapis lazuli. . .",[55] and Mann wrote to Walpole about a week later: "I carried into England a set of handles for dessert knives and forks of the false lapis lazuli which pleased extremely, and cost mighty little."[56] Perhaps the frugal Spence had had the tip from him during his stay in Florence. Walpole had at Strawberry Hill later a set of eight chocolate cups of lattimo with landscapes in brown,[57] and it comes as no surprise that at The Vyne too there are cups of this character. Walpole, indeed, had a commission to perform for Mann in the matter of glass, the latter having written to him on June 10th: "I will take the liberty to give you a commission for two or three pair of those little glasses to put over candles with a spring, such as you saw at Lady Pom's in the summer. They came from Venice and are only found there; they are called *fanale*."[58] Walpole wrote, probably on June 29th: "Your *fanali* will be finished by Saturday, when I will send them by the *procaccio* . . ."[59] Finally, Mann wrote on June 24th: "I thank you for the *fanali* which are to come. Cecco tells me you have bought such loads of glass; you was in the right to buy a good deal as much as I fear will be broke in its way home . . ."[60]

51. *Country Life*, January 3, 1957, p. 18.
52. *ibid.*, pp. 18-19.
53. British Museum, Egerton MSS. 2234, fols. 269-270.
54. British Museum, Egerton MSS. 2235, fol. 173.
55. *Correspondence*, III, p. 228.
56. *Correspondence with Sir Horace Mann*, I, p. 73.
57. *A Description of Strawberry Hill*, 1774, p. 9 (The China-Room): "A japaned tray with a vase for cream, and eight chocolate-cups and saucers with landscapes in brown, of the same ware." This item, coming directly after that referring to the *lattimo* plates which are the subject of this article, makes it clear what they were. Examples of this type of *lattimo* are in the Victoria and Albert Museum and elsewhere *(Glass: A Handbook* . . . Pl. 60, D.).
58. *Correspondence with Sir Horace Mann*, I, p. 59. Lady Pomfret was interested in glass lamps – see *Correspondence*, III, p. 32.
59. *Correspondence with Sir Horace Mann*, I. p. 76. The "procaccio" was a sort of postman.
60. *Ibid.*, p. 73. "Cecco" was the nickname of a Florentine acquaintance, Cecchino Suares. The cane-heads referred to in the following passage were almost certainly glass – "Mr. Chute is vastly disturbed about some heads of canes that Cecchino has been inquisitive after . . . He sometimes thinks you gave them to him,

It was natural that the tourists should be interested in the types of glass current at the time in Murano. The plates which form the subject of this article, however, were not current wares. They must certainly have been made to special commission, and when the character of their painted decoration is examined, certain conclusions may be drawn which extend their interest somewhat beyond the limits of glass history. Since the plates were clearly made in 1741, they cannot have been based on Brustoloni's engravings: many of them, indeed, do not agree in detail with those engravings. What then was their source? It has been suggested that the author of the originals from which they were copied was Michele Marieschi, who in 1741 brought out a series of 21 etchings (with title page) giving various views of Venice, some at least of them being after Canaletto.[61] When the scenes on the plates, however, are compared with these, it is evident that the differences are too great to permit the conclusion that they are copied from Marieschi's etchings. Further search has revealed that the source of the views of the Grand Canal was Antonio Visentini's series of engravings entitled *Prospectus Magni Canalis Venetiani*, the first 14 of which appeared originally with a title-page dated 1735.[62] (Figs. 7, 9, 11, 13). The history of this suite of engravings is of importance here, and needs to be gone into with some care. Although the first fourteen plates certainly appeared under the date 1735, there seem also to have been issues in 1736[63] and 1737.[64] These were re-issued as Part I of a more comprehensive series entitled *Urbis Venetiarum Prospectus Celebriores, ex Antonii Canal Tabulis XXXVIII. Aere Expressi ab Antonio Visentini*, with the date 1742 on the title-page. Of the remaining 24 plates in the copy used by the writer, half were grouped as Part II with frontispiece *Urbis Venetiarum Prospectus Celebriores*, etc., and date 1751, and the other half with the date 1742.[65] These sets of plates appear to have been issued at different dates, and there seems, in fact, to have been a 1751 issue.[66] It is therefore possible that the 1751 date on the title-page of the second part referred to above was, in fact, proper to the engravings with which it was issued, but that it was bound up with Parts I and III bearing the earlier imprints. There seems, however, to be no doubt that Part I, first issued in 1735, was originally supplemented by Parts II and III in 1742.[67]

Before going more deeply into this question, it is necessary first to turn to another aspect of the subject matter on the *lattimo* plates. Visentini's views are almost all (except for isolated

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at others that you did not . . ." (*Correspondence with Horace Mann*, I, p. 117, letter from Mann dated August 27, 1741). For glass cane-heads, see V. Lazari, *Notizia delle Opere d'Arte e d'Antichità della Racolta Correr*, Venice, 1859, pp. 100-101.

61. *Magnificentiores Selectioresque Urbis Venetiarum Prospectus*. See also F. Mauroner, "Michiel Marieschi," *Print Collectors' Quarterly*, xxvii, 1940, pp. 178-215.

62. Antonio Visentini, architect, painter and engraver, born in Venice, 1688, died there 1782. He was a pupil of Pellegrini and painted topographical scenes in the style of Canaletto (Thieme-Becker). In the copy of this work seen by the writer, the fourteen engravings certainly have the title page inscribed 1735. That at Windsor Castle is similarly dated – see K. T. Parker, *The Drawings of Antonio Canaletto in the Collection of His Majesty the King at Windsor Castle*, Oxford and London, 1948, p. 16. Another copy is in the Museo Correr at Venice (information kindly supplied by Professore G. Mariacher). See also n. 67 below.

63. See F. J. B. Watson, "Notes on Canaletto and his Engravers – II. Canaletto and Visentini," *Burlington Magazine*, December, 1950, p. 351; also Rodolfo Gallo, *L'Incisione nel '700 a Venezia . . .*, Venice, 1946, p. 18.

64. *Catalogue of the Library of Joseph Smith* sold by S. Baker and G. Leigh, January 25, 1773; Lot 631 (4th Day).

65. *Eighteenth Century Venice, an Exhibition of Paintings and Drawings held at the Whitechapel Art Gallery*, January 3 to March 14, 1951, p. 146, item 147. This copy was kindly put at the disposal of the writer by the owner, Mr. Horace Buttery.

66. See Gallo, *l.c.;* information kindly confirmed by Professore G. Mariacher from the copy in the Correr Museum.

67. In the Correr Museum is a series entitled *Prospectus Magni Canalis . . .* and dated 1742. This contains the 38 engravings (information kindly given by Professore G. Mariacher).

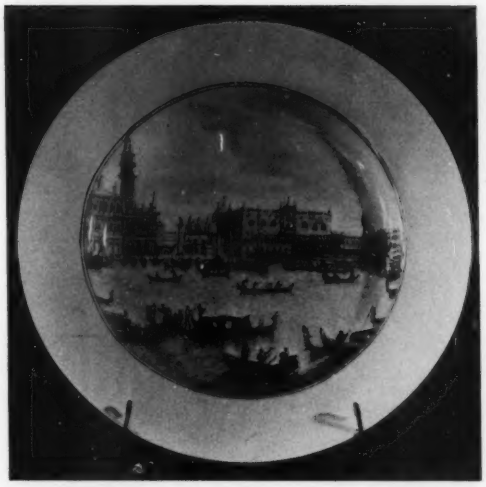

FIG. 14. Lattimo *plate with view of Doge's Palace and Bucentaur in foreground (No. 4). Diam. app. 9 in. Landesgalerie Sachsen-Anhalt, Moritzburg-Halle. Photograph Walter Danz, Halle.*

FIG. 15. Lattimo *plaque with view of Doge's Palace and Bucentaur in foreground. Museo Vetrario, Murano.*

engravings in Part III) of the Grand Canal, but some of those on the plates are not. It was therefore necessary to search elsewhere for the originals of these; the source was ultimately found in the series of etchings by Luca Carlevaris entitled *Le Fabriche, e Veduti di Venetia . . .* (Figs. 3, 5) and published in Venice in 1703.[68] A conspectus of the views on the *lattimo* plates, and the sources from which they are taken, is given in the Appendix to this article, and a number of them are shown, with the engravings or etchings which they follow, in the illustrations (Figs. 1-14, 16).

F. J. B. Watson has pointed out that the Visentini engravings issued in 1735 were for the most part probably ready well before that date,[69] and somewhat the same conditions appear to prevail in the case of the second series; for on the *lattimo* plates with the views of the Riva degli Schiavoni and of the Dogana seen from the Molo, the subjects have clearly been taken from engravings 11 and 12 of Part II, while that on the plate illustrated in Fig. 6 has been derived from the first engraving of Part III (Fig. 7). These, therefore, must have been available in 1741 for the painters of the plates to copy. It follows that the one person who could have authorized the use of these unpublished engravings must have been enlisted to help in the execution of this commission. This person was "Consul" Joseph Smith, who at this date was in fact not yet Consul, but only a British merchant and banker who had built up a considerable collection of works of art, and a considerable reputation as a purveyor of these works to his visiting countrymen.[70]

68. Luca Carlevaris, painter and etcher, born Udine 1665, died Venice 1731. This series of etchings numbered over 100 plates. An example is in the Department of Engraving, Illustration and Design at the Victoria and Albert Museum (E.I.D. 95. G. 39). See also F. Mauroner, *Luca Carlevaris*, Venice, 1945.

69. *L.c.*, p. 351, where he cites a letter from Smith to Samuel Hill dated July 17, 1730: "The prints of the views and pictures of Venice will now soon be finish'd. I've told you there is only a limited number to be drawn off, so if you want any for friends, speak in time." (Quoted from W. H. Chaloner, "The Egertons in Italy and the Netherlands 1729-34," *Bulletin of the John Rylands Library*, Vol. 32, No. 2, March, 1950, p. 164).

70. The inadequate entry in the *Dictionary of National Biography* may be supplemented by H. F. Brown in *Notes and Queries*, 1905, p. 221 ff.; J. B. Whitmore, P. H. Emden and H. F. Finberg, *ibid.*,

Although Walpole later referred disparagingly to Smith, in a famous passage, as "the Merchant of Venice" and spoke of "the title-page of his understanding,"[71] Smith must in fact have been of considerable assistance to him during his stay in Venice. Mann directed his letters to Walpole in his care,[72] and wrote on July 1st: "I still send you the newspaper because you have not countermanded them though I suppose you see them from Mr. Smith."[73] When Walpole deferred his departure from Venice, it was Smith who wrote to Mann to inform him,[74] and when Gray required an advance for his return to England, it was Smith who made it and later drew on Mann for the amount.[75] He concerned himself equally with "the Chutes." It was he who wrote to Mann and gave him news of their departure from Venice.[76] He was probably equally useful to the Lincoln-Spence party. Spence's notes show that Smith was among the people whom he had met, or to whom he had introductions, in Venice:[77] and in a memorandum concerning travelling costs occurs the entry: "Venice

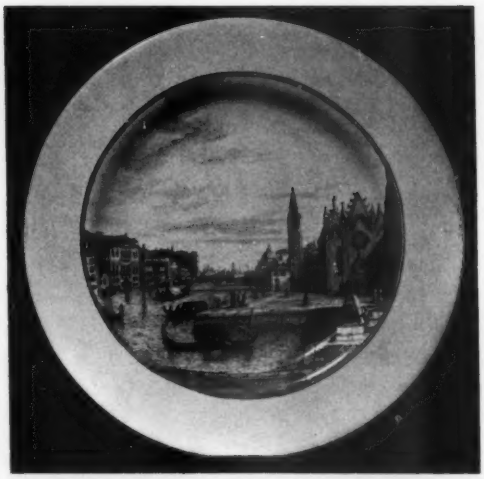

FIG. 16. Lattimo *plate with view of the Church of the Carità (No. 30). Diam. app. 9 in. Messrs. A., W. and P. Andrews.*

D'Enry. Chambers according to their goodness . . ." This is signed "Notizie Smith."[78]

Employees in the consular service at this period did a great deal more for their fellow nationals than their successors do today. It is evident from his correspondence that Mann received in his own house the travellers on the Grand Tour, and did all manner of services for them. For instance, he became embroiled in a matter of Lady Pomfret's, receiving "an awkward letter from Lady Pom a little while ago to say she had been sorry to hear I was ill and to thank me for the trouble I had been at to keep a great trunk and box of hers which she now would disburthen my house of if I would be so good to send them to England,"[79] a request which turned out to be far more complicated than appeared at first sight. Sir Francis Dashwood, who had been of the party in Florence, later commissioned Mann to obtain for him some vases from Volterra, and despite the fact that Sir Francis had spoken ill of Mann, and

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1944, pp. 154, 207, 255-6. The important questions regarding the sale of his collections to King George III are dealt with by K. T. Parker, *op. cit.*, and by F. J. B. Watson, *Canaletto*, London and New York, 1949. The contemporary significance for visitors of Smith's collection may be gleaned from Thomas Nugent, *The Grand Tour . . .*, London, 1749, III, p. 99: "the library and drawings belonging to Mr. Smith, the *English* consul . . . are also worthy of notice." The extent of Visentini's dependence on Smith is made clear by F. J. B. Watson, "Notes on Canaletto and his Engravers — II," *Burlington Magazine*, December 1950, pp. 350-352. See also A. Blunt, "A Neo-Palladian Programme Executed by Visentini and Zuccarelli for Consul Smith," *Burlington Magazine*, August 1958, pp. 283-4.

71. *Correspondence with Sir Horace Mann*, II, p. 465, letter dated June 18, 1744, O.S.

72. *Ibid.*, I, p. 58, letter dated June 10, 1741.

73. *Ibid.*, p. 84.

74. *Ibid.*, p. 88, letter from Mann dated July 15.

75. *Ibid.*, p. 82, letter from Mann dated July 1; Gray repaid the sum (£20) the day after his return, to Mann's brother in England, *ibid.*, p. 445.

76. *Ibid.*, p. 101, letter from Mann dated August 6, 1741.

77. B. M. Egerton MSS. 2235, fol. 94. For Smith's connections with the Pomfrets, see Lady Pomfret's *Correspondence*, III, pp. 207, 238 and 240.

78. *Ibid.*, fol. 169/170.

79. *Correspondence with Sir Horace Mann*, I, p. 129, letter of September 10, 1741.

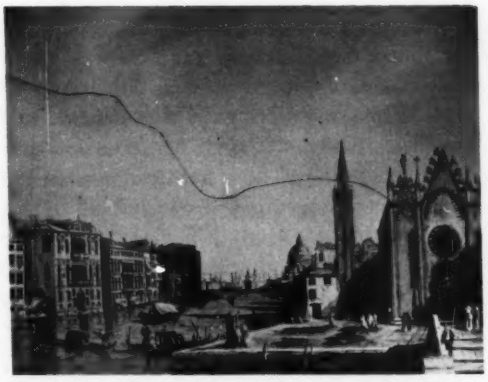

FIG. 17. Lattimo *plaque with view of the Church of the Carità. Museo Vetrario, Murano.*

was moreover of dubious loyalty to the Throne, his commission was duly executed.[80] That Mann should undertake such tedious business for Walpole might have flowed naturally enough from their friendship: that he did it for others whom he had no reason to love, is a clear indication of where he considered his duty as Consul lay.[81] Where there was no consular official to undertake these commissions, self-appointed guides found it profitable to do so. In Rome there was a Mr. Parker, who "is a gentleman who goes about with the English to show them what is most remarkable; assisting them also in buying what pictures, prints, and other curiosities, they fancy most: he also hires lodgings, servants, etc.: for which he has a present of some zechins (the gold coin here) when they go away . . ."[82] Spence made payments to Parker,[83] and Walpole, through Mann, employed him in obtaining a copy of the Livia Mattei and a series of views of Rome.[84] It was only to be expected, under the circumstances, that the "Merchant of Venice" should have been concerned with supplying similar wants of his visiting countrymen in Venice. Spence in his memoranda included a list of presumably cameos of Roman Emperors, headed "Smith," and notes "1740. Smith, Julius to ye Ant: (onines) 27 thence towd Const(antine) 29. Lower &c. 9 in all 65," these being presumably coins or cameos in Smith's possession at the time of Spence's visiting him.[85] More important, we have clear evidence that Smith was actively engaged in interesting Chute and Walpole in his collections. Writing to Mann in June 18th, 1744, Walpole says: "My dear Mr. Chute, how we used to enjoy the title-page of his understanding! Do you remember how angry he was, when showing us a Guido after pompous rooms full of Sebastian Riccis, which he had a mind to establish for capital pictures, you told him he had now made amends for all the rubbish he had showed us before?"[71]

It is hardly likely, however, that the production of the *lattimo* plates was Smith's idea. The tourists with whom he had to deal were already filled with the notion of obtaining views of the places they had visited. Already in Rome Spence had bought "Canaletti's views" for 12 Crowns and 80 Baycocks,[86] and in Venice he bought "Views of Venice" for 10 shillings.[87] There seems a distinct possibility that these were indeed the Carlevaris etchings which provide a source of some of the *lattimo* plates, for a copy of this work was included in the sales of Spence's library which took place on August 8th, 1769.[88] Walpole too was greatly

80. *Ibid.*, pp. 287 (January 28, 1742), 351 (March 11, 1742), 369 (March 25, 1742), 412 (May 15, 1742).

81. In the last letter quoted, he specifically uses the word "impegno," or duty, for this service rendered.

82. Lady Pomfret writing to Lady Hartford, March 29, 1741 – *Correspondence*, III, p. 23. Mr. F. J. B. Watson kindly informs me that Parker was a well-known figure in Rome at this period, acting as agent and banker to most of the well-to-do English travellers.

83. B. M. Egerton MSS. 2235, fol. 172.

84. *Correspondence with Sir Horace Mann*, I, pp. 81 (July 1, 1741), 212 (November 26, 1741, O.S.), 268 (January 16, 1742), 317 (February 11, 1742), 395 (April 22, 1742).

85. *L.c.*, fol. 160.

86. *L.c.*, fol. 172.

87. *L.c.*, fol. 173.

88. *A Catalogue of the Entire Libraries of the Rev. Mr. Joseph Spence . . . (and others)*, sold by Benjamin White, August 8, 1769, p. 2, Lot 28.

concerned with obtaining views of Florence and Rome,[89] and there is no reason why he should not have been equally anxious to obtain views of Venice.[90]

With the aid of all the available plates, it is possible to see how each set of 24 was made up. This composition is made clear in the Appendix, and it is interesting to discern the aims of the travellers as reflected in their choice of subjects. Visentini's first fourteen engravings were designed to give a general view of the Grand Canal in its various reaches. The set starts with the Rialto Bridge, working up the Canal to the Dogana, then returning to the Rialto and working down to S. Chiara. The last two engravings, however, depart from this scheme and show respectively the annual race of gondolas on the Grand Canal, and the Bucentaur (the Doge's State barge) moored beside the Palazzo Ducale, presumably ready for the Ascension Day ceremony of the *Sposalizio dal Mar*.[91] Both these scenes were special points of interest for visitors, and that is no doubt the reason why they have been added to the otherwise straightforward topographical series representing the Grand Canal. Horace Walpole specifically mentions that the party consisting of Gray and the Chutes went to Venice for the festival of the Ascension (p. 69 above), and there can be little doubt that the general movement of the English travellers across Italy to Venice at just this moment was timed so that they should be in the city for the great annual festival. Similarly, it is clear from her letters[92] that Lady Pomfret took a particular interest in the regatta on the Grand Canal. But the Grand Canal is far from exhausting all the sights of Venice, nor did Visentini's first suite of engravings even do it full justice. The tourists appear to have thought that the Rialto Bridge[93] (Color Plate) and S. Maria della Salute (Figs. 8-11) received insufficient detailed attention, and therefore added to Visentini's repertory the views from Carlevaris showing the side of the Rialto Bridge, and two additional aspects of S. Maria della Salute. Visentini's engraving of the Bucentaur showed only one side of the Doge's Palace (Figs. 12-15), and the buildings between the Piazzetta and the Dogana were unrepresented. The two engravings 11 and 12 (Fig. 11) of Visentini's second series — presumably at this time only in the form of preparatory drawings, or possibly engraved awaiting the completion of the whole suite before publication[94] — were naturally chosen to fill the gap, as they were no doubt intended by the planner of the series, whether Smith or Visentini. Views of the Piazza and Piazzetta were obtained from Carlevaris (42, 47, and 50, and 49), and other notable sights dotted about the city were copied from both artists — S. Giorgio Maggiore (6, Fig. 2), the Church of I Mendicanti (35) and the gates of the Arsenal (63, Fig. 4) from Carlevaris; and the Church of SS. Giovanni e Paolo from the more miscellaneous plates of Visentini's third volume (Fig. 7). To make room for some of these, two of the duller views of the Canal, from Visentini's first suite, were omitted.

The rectangular engravings have been cleverly adapted to the circular form of the plates,

89. *Correspondence with Sir Horace Mann*, I, pp. 36 (n. 34), 41 (May 9, 1741), 57-58 (June 3, 1741), 58 (June 10, 1741), 68 (June 17, 1741); see also above, n. 84, for Parker's part in supplying views of Rome.

90. Walpole paid £37.6.0 for his 24 plates — information kindly supplied by Mr. W. S. Lewis from the priced copy (1774) of the Strawberry Hill Catalogue in his possession.

91. See Parker, *op. cit.*, p. 30, No. 7.

92. *Correspondence*, II, pp. 83-7. She also gave Lady Hartford a full description of the Bucentaur (*ibid.*, III, p. 213, letter dated June 8, 1741).

93. This was almost the symbol of Venice. An opera put on in London in January 1742, ended with a ballet, of which Walpole wrote: "they have flung open the stage to a great length, and made a perfect view of Venice with the Rialto and numbers of gondolas that row about full of masks, who land and dance . . ." (*Correspondence with Sir Horace Mann*, I, p. 302). Lady Pomfret, writing to Lady Hartford on June 18, 1741, says: ". . . But I need not endeavour at a description of this bridge, which no doubt you have seen represented in some of the painted views, that many people have taken to England . . ." (*Correspondence*, III, p. 342).

94. See above, p. 75.

by altering the positions of boats or figures in the foreground, or by adding figures to fill in empty spaces. Apart from these details of "staffage," the copies are pretty faithful, the notable exception being, perhaps, the omission of the flag-staffs across the Piazza in Carlevaris' etching No. 42. The painting appears to be by more than one hand (cf. Fig. 12 and Fig. 14), and this is hardly surprising in view of the speed with which the order must have been completed.

Probably none of the plates were originally placed in the houses with which they are here associated. When Walpole arrived home in September, 1741, his father was still in power, and the son moved into his house in Downing Street (later No. 10). He wrote to Mann on October 19th: "I write to you up to the head and ears, in dirt, straw and unpacking. I have been opening all my cases from the custom house the whole morning, and, are not you glad, every individual safe and undamaged. I am fitting up an apartment in Downing Street . . ."[95] After Sir Robert's fall on February 3rd, 1742, a new home had to be found. He left Downing Street about July 21st, 1742, and moved to his house in Chelsea; in the late Autumn of that year he transferred to Arlington Street, joining his house to the neighbouring smaller house for his son.[96] Horace Walpole did not take Strawberry Hill until 1747, and the "China Room" was not begun until 1755.[97] Similarly, Lord Lincoln had at this time no house at Clumber.[98] He lived either at his town house in St. James's Street, which he occupied shortly after his return from the Grand Tour,[99] or at his country seat of Oatlands, near Weybridge, in Surrey.[100] Unfortunately, no contemporary account or inventory of the interior at Oatlands appears to have survived,[101] and the history of Lord Lincoln's plates cannot be traced between 1741 and their sale in 1937.[102] On his return to

95. It seems very likely that Walpole took his set of plates with him on the homeward journey. He wrote to Mann about the Customs on September 13, 1741, O.S. a day or two after his arrival: ". . . they respected Sir Robert's son even in the person of his trunks." It was presumably this baggage which he referred to in the letter quoted below, see *Correspondence with Sir Horace Mann*, I, pp. 142, 170-171, 176.

96. See *Correspondence with Sir Horace Mann*, I, p. 334, and n. 35.

97. See W. S. Lewis, "The Genesis of Strawberry Hill," *Metropolitan Museum Studies*, New York, 1934, V, pp. 58 and 72.

98. See above, p. 67.

99. See *Correspondence with Sir Horace Mann*, I, p. 301 and n. 47.

100. The history of Oatlands, a celebrated house in the 17th century, seems to have been neglected, and much of the information about it is contradictory. Thos. Allen, *A New and Complete History of the Counties of Surrey and Sussex*, London, 1829, II, p. 3 writes that the property "was devised in 1716 to Henry, Earl of Lincoln. George, son and heir to this nobleman, formed the gardens about the year 1725, and probably built the house, which at his death devolved to his brother Henry. The latter married Catherine, daughter to Henry Pelham, Esq., and niece to the Duke of Newcastle, who, having no child, obtained a patent creating him Duke of Newcastle-under-Line (*sic*), with remainder to the earl, his nephew. He accordingly succeeded to this dignity in 1768 and fixed his residence at Oatlands." Lincoln, however, had given Spence his house at Byfleet nearby before 1749 (*Anecdotes*, p. xxv), and the house is mentioned in a letter from Sir Alexander Dick to Spence on March 6, 1762 (*Anecdotes*, p. 360), so it must surely have been Lord Lincoln's regular country residence well before 1768. In 1758, indeed, Gray wrote to Wharton a long passage about the plantations at Oatlands (*Correspondence of Thomas Gray* [ed. P. Toynbee and L. Whibley], Oxford, 1935, II, p. 578). In July of 1768 a characteristically delightful episode involving Lord Lincoln and his "beautiful house at Weybridge" is recounted by William Hickey in his *Memoirs* (ed. Alfred Spencer, London, 1950, I, pp. 95-7). Already in 1755, however, the house had been referred to in some verses by Lord Bath written in praise of Strawberry Hill –

Though Surrey boast its Oatlands,
And Claremont kept so gim

(*Horace Walpole's Correspondence with George Montagu* [ed. W. S. Lewis and R. S. Brown], London, 1941, I, p. 169). In 1782 the owner, then Duke of Newcastle, was proposing to sell the house (*Horace Walpole's Letters* [ed. Toynbee], XII, p. 316), and either before or after a disastrous fire in 1793 or 1794, it was bought by the Duke of York. Its subsequent history is of no concern here.

101. The Surrey County archives contain no material relating to the house.

102. Neither the Public Libraries, Nottingham, nor the Nottingham County archives contain any information relating to the interior of Clumber. An inventory of 1760 preserved in Nottingham University gives no indication of where the plates were shown, unless they were the "Two Dozen of plates" of "Delph" valued at

England in 1746 John Chute was still only in the position of a younger brother, and we do not know for certain where he was living[103] between this date and his succession to the family honors in 1754.[104] His set of plates has no doubt remained at The Vyne from that day to this. There they were seen in September, 1780, by Mrs. Lybbe Powys, who wrote in her diary that month: "At the Vine are numberless curiosities, among which a service of finest delf, much more valuable than any china, each plate a different view of Venice . . ."[105]

On the evidence available, it is impossible to say in which Venetian glass-house the plates discussed in this article were made or painted. Two only come in question. The first is that of the Bertolini brothers, who in 1731 had given evidence before the Council of Ten regarding the bead-manufacture at Murano.[106] In 1738 they applied for and obtained a privilege for 10 years for the making of "smalto" (or enamel) glass in imitation of porcelain, with decoration in gold.[107] None of their work has hitherto been identified with certainty. The second firm is that of the Miotti family, which had worked the factory at the sign "Al Gesù" at least since the beginning of the 17th century.[108] On January 19th, 1717 the Inquisitors of State ordered the Gastaldo (the responsible officer) of the Murano glass-makers not to put any obstacles in the way of Vincenzo, son of Daniel Miotti, and his sons exploiting their furnace of 3 pots for the manufacture of "glasses, blown crystals, *calcedonio*, enamels ("smalti"), mosaics, and others colors, which they work by their own secret processes."[109] Domenico Miotti, described as "A very able painter in enamel colors on *smalti*," is alleged to have been at work in 1719,[110] and other members of the family are mentioned in archives dating from the second half of the century.[111] More to the purpose here, however, is the fact that a number of signed and dated pieces of *lattimo* are known from the sign of "Al Gesù."[112] The dates range from 1731 to 1747[113] and thus effectively demonstrate that, whatever privilege the Bertolini may have obtained on paper, the Miotti were in fact at this period specializing in the production of *lattimo* objects with decoration in enamel colors.[114] It therefore seems more probable that it was they who made and decorated the plates which found their way to Strawberry Hill, Clumber, and The Vyne.

The Museo Vetrario at Venice possesses two large slabs of *lattimo* (Figs. 15, 17)[115] which must be mentioned in this connection. Both are painted, like the plates, in red monochrome, and the scenes on both are taken from two of

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6/6d. and kept in Room 43 with other ceramic wares (cf. n. 105 below). They may not even have reached the house by this date.

103. In 1759, however, he had a London house and may have had it for a number of years previously (*Horace Walpole's Letters* [ed. Toynbee], IV, p. 234, letter of February 1, 1759).

104. This happy event is celebrated in an enthusiastic letter from Walpole dated May 21, 1754 (*Horace Walpole's Letters* [ed. Toynbee], III, p. 235 ff).

105. *Passages from the Diaries of Mrs. Philip Lybbe Powys* . . . (ed. Emily J. Climenson), London, 1899, p. 204. Can it have been to Walpole's plates that she was referring when she picked out for mention at Strawberry Hill, which she visited in 1785, "fine old delf"? (*ibid.*, p. 228).

106. B. Cecchetti and V. Zanetti, *Monografia della Vetraria Veneziana e Muranese*, Venice, 1874, pp. 17-18.

107. W. Drake, *Notes on Venetian Ceramics*, London, 1868, appendix, pp. x-xi.

108. Cecchetti and Zanetti, *op. cit.*, p. 268.

109. *Ibid.*, p. 232.

110. *La Voce di Murano* for April 30, 1895, p. 27.

111. See e.g. Cecchetti and Zanetti, *op. cit.*, p. 232.

112. See e.g. Honey, *op. cit.*, p. 62. Since this article was written there has appeared an article by Professore G. Mariacher entitled "I 'Lattimi' dei Miotti al Museo Vetrario di Murano" (*Bolletino dei Musei Civici Veneziani*, 2, 1958, pp. 5-13), in which a number of these pieces by the Miotti are described and illustrated.

113. Slabs with biblical scenes in the Museo Vetrario, Murano (Drake, *op. cit.*, p. 26, n.) dated 1731. Bottle in the British Museum (William King Bequest) dated 1747.

114. All the objects referred to above are painted in polychrome.

115. These were first published by G. Morazzoni, "Il Lattimo Veneziano," *Dedalo*, Anno IV, Fasc. VI, Nov. 1923, pp. 384-5, where the source of the design was correctly identified as Visentini's engravings.

the Visentini engravings which are also copied on the plates (Figs. 14 and 16). That they are related to the plates is therefore clear, but the exact nature of the relationship is not. Slabs of *lattimo* with enamelled decoration survive from as early as 1731.[116] Is it possible that the sight of the Murano slabs inspired Horace Walpole and his friends with the desire to possess sets of plates which should record in a comparable way the important sights of the picturesque city they were visiting? Or were they made after the English visitors had left, in continuance of an idea which they had conceived?[117] Whatever the answer to these questions, it can scarely be denied that on them the painter has lavished greater care than was perhaps possible in the case of the six dozen plates which had to be completed in the months of June and July, 1741.

116. See n. 113.

117. It should perhaps be borne in mind that a porcelain tray painted with views of the Piazza and Piazzetta bears the arms of Carlo Ruzini as Doge (1732-35) and was therefore presumably painted not later than 1735 (Drake, *op. cit.*, pp. 22-23).

APPENDIX

VISENTINI PART I

	Title	*Original*	*The Vyne*	*Strawberry Hill* *Clumber*		*Misc.*
PLATE I	Ex Ponte Rivoalti, Canaletto.	Windsor		32		
III	Hinc ex Aede Charitatis, Canaletto.	Windsor		30		Murano plaque
IV	Hinc ex Platea S. Viti, Canaletto.	Windsor	12			
V	Ex Aede Salutis, Canaletto.	Windsor	13			
VI	Caput Canalis, Canaletto.	Windsor		11	3	
VII	Pons Rivoalti ad Occidentem, Canaletto.	Windsor			8	
VIII	Hinc ab Aedibus Publicis, Canaletto.	Windsor		10		
X	Ingressus in Canalem Regium, Canaletto.	Windsor	14/15			
XI	Hinc ex F. F. Discalceatorum Templo, Canaletto.	Windsor	16	9	7	
XII	Ex Fullonio usque ad Aedem S. Clarae, Canaletto.	Windsor	17	31		
XIII	Nauticum Certamen, Canaletto.	Windsor	18			
XIV	Bucentaurus et Nundinae Venetae, Canaletto.	Windsor	19		4	Murano plaque

(APPENDIX CONTINUED ON PAGE 82)

APPENDIX (*continued*)

	Title	*Original*	*The Vyne*	*Clumber*	*Strawberry Hill*	*Misc.*
VISENTINI	PART II					
11	Prospectus a Columni S. Marci	*	20			
12	Prospectus a Columni S. Theodori, Canaletto.	Luigi Albertini Coll.	21			
	PART III					
1	Platea SS. Johannis & Pauli, Canaletto.	Windsor		29	1	
CARLAVARIS						
PLATE 5	Altra Veduta della Chiesa della Salute, Carlevaris		22			
6	Chiesa di S. Giorgio Maggiore, Carlevaris				5	
35	Chiesa et Hospitale de Mendicanti, Carlevaris		23			
42	Veduta della Piazza di S. Marco, Carlevaris		24			
47	Veduta della Piazza di. S. Marco†, Carlevaris		25		28	
49	Veduta della Piazzetta, Carlevaris			33		
50	Altra Veduta della Piazza, Carlevaris		26			
57	Altra Veduta del' Ponto di Rialto, Carlevaris		27		2[?][10]	
63	Altra Veduta della Porte del' Arsenale, Carlevaris				6	

(Note: in addition to the above, there was a plate in the Rosenheim Collection, so far unidentified)

*Mr. F. J. B. Watson has kindly pointed out to me that the originals for these engravings are perhaps rather to be looked for in the series of paintings once in the Harvey collection.

†Mr. Watson has kindly drawn to my attention a series of four Visentini engravings of views in the vicinity of the Piazza from which this representation may perhaps have been drawn. See also R. Gallo, *loc. cit.*, p. 41.

A REMARKABLE GOBLET FOR A REMARKABLE WOMAN

H. E. VAN GELDER

IN *Oud-Holland*[1] I published three goblets decorated in the years 1735, 1743, and 1778 by the Dutch glass engraver Willem Otto Robart, born at The Hague in 1696. One of them is signed "W. O. Robart," the other two only "W:O:R." Now, the Curator of The Corning Museum of Glass writes that they have acquired a fourth one. (Fig. 1). It is an important piece, covered, nicely marked and probably among the best work of the artist.[2] On the bowl there are four coats-of-arms, and on the reverse an inscription reading: "Prae Nobili Ac Bene Natae Dominae Dominae Charlottae Elisabethae Van Der Lith, Trium Gubernatorum Coloniae Surinamiensis, Riparum, Eiusdemque Subalternarum Regionum, Atque Ibidem Militum Praefectorum, Viduae Insigni, Hic Consecratur Crater, Per Benevolum Ac Obedientissimum Famulum; W:O:R. Fecit 1741."[3] On the cover there are three putti with a horn of plenty beneath a sun motif and the "All-seeing Eye." The inscription reads: "Ter Conjux, Materque Trium, Nunc Absque Marito Facta, Regit Sobolem, et Blanditur Lumine Proli."[4]

The four coats-of-arms facilitate the interpretation of the inscriptions. After investigations in the State and Communal Archives at The Hague,[5] I can relate the following:

Charlotte Elisabeth van der Lith was baptized November 21, 1700 at The Hague as the daughter of D. van der Lith and Elisabeth B. Helvetius.

The father, formerly a professor in Frankfurt on the Oder, was a clergyman of the Dutch Reformed Church. In 1722 the young lady went to Paramaribo, the capital of the Dutch colony of Surinam. In January 1725 Charlotte Elisabeth married Hendrik Temming, a widower[6] who was governor of the Colony. Before he died on August 17, 1727, a daughter was born to them.[7] Then in 1729 Charlotte Elisabeth married her

1. "Achttiende-eeuwse glas-snijders in Holland, II. C. Willem Otto Robart," *Oud-Holland*, LXXIII, II, 1958, pp. 96-101.

2. Acc. No. 56.3.75. H. 17¼" (43.8 cm) with cover. Ex-collection Baron Henri Steengracht van Duivenvoorde. *Lempertz Catalogue 446*, November 14-17, 1956, No. 673. The piece has been broken and repaired at the stem with a metal collar.

3. "To the very famous and well born lady Charlotte Elisabeth van der Lith, distinguished widow of three governors of the Colony of Surinam, of the shores and dependant regions and commander of the army, this vessel is dedicated by a devoted and most obedient servant; W.O.R. made it 1741."

4. "Thrice wife, and mother of three, now widowed, she governs her offspring and enlightens her family."

5. I thankfully remember the help of the archivists.

6. He married on April 6, 1710, Maghteld van Wouw, at The Hague. It is interesting to note that the mother of W. O. Robart's wife was also a van Wouw.

7. Joh. Bald. Temming, married in April of 1745, E. Couderc, member of the Court of Justice of Paramaribo.

FIG. 1. *Goblet, engraved by W. O. Robart, dated 1741.*
The Corning Museum of Glass.

late husband's successor, Charles Emilius Henry, Marquis de Cheusses. Born in Copenhagen December 13, 1702, and governor from 1728 to 1734, he was the grandson of the very wealthy Cornelius van Aerssen van Sommelsdyk, the first governor of Surinam. They also had a daughter, Henriette Maria de Cheusses, afterwards the wife of Philip H. Baron von Lindau. De Cheusses died January 26, 1734, and Charlotte Elisabeth continued as first lady by marrying Governor Joan Raye on the 10th of February 1737. He had been created governor in 1735, succeeding de Cheusses' younger brother, but died the same year of his marriage on the 11th of July, 1737. A son, Joan Raye, was born the same year.

The goblet is dated 1741; the coats-of-arms are those of "C. E. van der Lith," "H. Temming," "C.E.H. A Cheusses" and "J. Raye."

In the literature Charlotte is called a very wealthy widow, stately in appearance, very intelligent and ambitious; her political influence was important, not only during the time her husbands were governors of the colony, but also afterwards as the younger brother of the heretofore named de Cheusses, who was governor for only six months, married Charlotte Elisabeth's stepdaughter Temming.

Who was the "obedientissimus famulus" who offered her the goblet? I do not believe that it was Robart himself notwithstanding his signature immediately following the "consecration." I would guess it was the fourth husband of Charlotte Elisabeth, the clergyman Antony Audra who came to Paramaribo in August of 1741 and who married her January 7, 1742. It may be that he had known Robart at the Leiden Academy where Robart was enrolled in 1740.

Alas for Antony Audra, his marital happiness did not last long – as it had not for any of Charlotte Elisabeth's husbands. He died May 17, 1744. The lady herself found consolation for the fifth time by marrying Bart. Ludov. Duvoisin, also a clergyman of the Walloon Reformed Church in Paramaribo, on the 27th of May 1748. He had no more luck than his predecessors and died November 1, 1751.

Charlotte Elisabeth van der Lith, after having governed over five husbands and the Colony of Surinam, and after many, alas successful, intrigues against Raye's successor Mauricius, died at last on the 6th of August, 1753, in Paramaribo, not fully 53 years of age.

The goblet by one of the most remarkable "cristaldrillers" of 18th century Holland, now in Corning's Museum, recalls the politically and sentimentally emotional life of a remarkable woman.

FIG. 1. *Cinerary urn, probably late 7th–early 8th century A.D. Courtesy of the Tokyo National Museum.*

INTRODUCTORY NOTES ON THE ANCIENT GLASS OF JAPAN

KAZUO YAMASAKI

THE protohistoric period of Japan is divided into the Jômon period and the Yayoi period, both named after types of excavated earthenware. No glass has been found from the older Jômon period (earlier than 200 B.C.), but from the Yayoi period (about 200 B.C.–300 A.D.) several glass pieces have been excavated. For example, at Toro, Shizuoka prefecture in central Japan, which was a dwelling site from the 1st-3rd centuries, several glass beads have been found. One such bead is bluish-green in color and has a diameter of 0.3 cm and a height of 0.2 cm. Its density and refractive index are about 2.3 and 1.492 respectively. It is made of alkali-lime glass and spectrographic analysis shows the presence of copper, tin, lead and silver as minor and trace constituents.[1]

In several tombs of the Yayoi period situated in Fukuoka prefecture in western Japan glass beads were found, but no chemical examination was done. The beads of the Yayoi period might have been imported from China.

The Yayoi period is followed by the Kofun period (period of the burial mound, 3rd-6th centuries). In the tombs of this period scattered in various parts of Japan, numerous glass beads have been found, but only a few reports on chemical analysis published. Some of the results are given in Table 1.

Since small blue and green glass beads have been found in quantity, it seems credible that they were produced in Japan, although details of the origin of glass making are unknown.

One of the characteristic glass relics found in Japan is the Magatama bead. This resembles a comma in shape. In most cases such beads were made of stone, but in several tombs glass examples were found. The Magatama was doubtless a necklace bead. Since it is peculiarly Japanese, those made of glass must have been produced in Japan. Chemical analysis of a Magatama is now under way by the present writer.

With the coming of Buddhism to Japan in the 6th century and during Asuka and Nara periods (552-793) glass vessels were highly esteemed. Small glass bottles were used as receptacles for the most sacred Buddhist relics, each encased in several outer metal receptacles and the whole placed underground on the site

1. K. Yamasaki, in: *Sci. Papers Japanese Antiques and Art Crafts*, No. 8, 1954, 16 (in Japanese).

where a pagoda was constructed. Examples of these glass receptacles were actually found in the Pagodas of Hôryû-ji, Sûfuku-ji and other temples. As far as is known, these bottles are of heavy green glass. The bottle of the Sûfuku-ji temple was investigated by means of beta-ray back scattering and it was found to be made of lead glass containing about 30% PbO.[2]

In the Nara period, glass vessels were also used as cinerary urns. An urn of green glass[3] was excavated at Nara prefecture and is now preserved in the Tokyo National Museum (Fig. 1). It was found with a gilt bronze plate bearing the date of the burial, 707, and the name of the deceased, Fumi-no-Nemaro. This cinerary urn appears to be made of lead glass colored with copper; it was probably imported.

By the time of the Nara period, glass making reached a level of high excellence, and thanks to some of the temple and shrine treasuries, in particular to the Shôsôin, we can today study many fine glass specimens of the 8th century, both imported and of Japanese make.[4] The Shôsôin is the repository of Imperial treasures at Nara many of which have been preserved virtually intact for 1200 years. It is opened only once a year in autumn with the Imperial Permission at which time various studies of the treasures are made. In the Shôsôin there are beads in quantity. They are dark blue, light and dark green, yellow and brown, opaque-white and colorless. In addition to round, twisted and inlaid beads, the so-called dragon-fly type is included in the Shôsôin group.

The use of such glass ornaments continued in the later Nara period (the 8th century), but in the Heian period (9th-12th centuries) the production of glass beads decreased considerably. The reason is not clear, but change in customs and manners may have had an effect. The use of glazed ceramics may also have influenced production. In the 13th century, glass bead-making in Japan is supposed to have been almost entirely suspended.

In 1750 after the opening of Nagasaki port to Portuguese trade, the European glass making techniques were imported and introduced to other parts of Japan. In the 18th and 19th centuries glass was called "*Bidoro*" and "*Giyaman*" in Japan. The former is the Portuguese word "vidro" for glass, and the latter seems to be derived from the Dutch word "*diamant*" which means diamond and refers to cut glass.

TABLE 1.

Chemical composition of several glass beads of the Kofun period in Japan

Sample	A	B	C	D
color	pale green	dark blue	pale green	dark blue
density	2.40	2.49	2.34	2.48
refractive index	1.502	1.505	–	–
SiO_2	60.47	65.60	64.17	66.22
Al_2O_3	12.04	4.01	11.23	2.97
Fe_2O_3	0.18	0.24	1.63	1.30
TiO_2	0.34	0.09	–	–
MnO	0.56	0.004	0.33	0.50
CaO	6.68	7.18	3.40	7.33
MgO	0.42	2.43	0.57	3.27
Na_2O	14.91	15.63	13.41	14.36
K_2O	3.67	3.47	4.99	2.98
PbO	0.27	0.07	–	–
CuO	0.42	0.24	0.87	–
CoO	0	0.003	–	0.47
SO_3	0.17	0.44	–	–
total	100.13%	100.24%	100.60%	99.40%

Samples A and B: Found at the Hakusanyabu tomb, Aichi prefecture.[5]

Sample C: Found at Minoyama tomb, Kyoto prefecture.[6]

Sample D: Found at Futagozuka tomb, Kyoto prefecture.[6]

2. T. Asahina, F. Yamasaki and K. Yamasaki, in: *UNESCO International Conference on Radio-isotopes in Scientific Research*, Paris, 1957. Research Paper No. 64.

3. D. 5⅝" [15.0 cm].

4. For the examination of glass vessels preserved in the Shôsôin by the method of beta-ray back scattering, see T. Asahina, F. Yamasaki and K. Yamasaki, in: *UNESCO International Conference on Radio-isotopes in Scientific Research*, Paris, 1957, Research Paper No. 64. A detailed study of these glass vessels with photographs will be published in future issues of this Journal.

5. K. Yamasaki, F. Miwa and N. Ohashi, in: *Sci. Papers Japanese Antiques and Art Crafts*, No. 3, 1952, 28 (in Japanese).

6. M. Nakao, in: *J. Archaeological Soc. Japan*, 21, 1931, 245, 337 (in Japanese).

AN AMELUNG SUGAR BOWL

FLORENCE M. MONTGOMERY

IN recent years table glass and drinking vessels made at the New Bremen Glass-manufactory near Frederick, Maryland, under the direction of John Frederick Amelung have been ranked by collectors and connoisseurs as the finest created in eighteenth-century America. Though such production was planned from the beginning of the venture, window glass, and white and green hollow ware appear to have been the main output between February 1785[1] and 1787 when Amelung stated in his pamphlet *Remarks on Manufactures, Principally on the New Established Glass-House near Frederick-Town, in the State of Maryland* that in Baltimore, Frederick and Elizabeth-town, gentlemen were satisfied with his wares.[2] Over the short span of years between 1787 and 1795, when the glass works were put up for sale, the following wares other than window glass, bottles and phials were advertised at various times:

"Quart, Pint, Half-Pint, Gill, and Half-Gill Tumblers, wine glasses"[3]; "Quart, Pint and Half-Pint Decanters, exact Measure, Goblets, Glass Cans, with handles, of different sizes . . . very little inferior in quality to any imported . . . ; all kinds of Flint glass, such as Decanters and Wine Glasses, Tumblers of all sizes, and every other Sort of Table Glass."[4]

In a May 16, 1789 advertisement engraving was first mentioned: "He also cuts Devices, Cyphers, Coats of Armes, or any other Fancy Figures in Glass."[5] It has been possible to attribute with fair certainty a good many copper-wheel engraved pieces to this glasshouse because the style and character of the decoration were established by the invaluable fact that the Bremen Pokal, the Charles Ghequiere Covered Tumbler, the Boston Tumbler and the Mifflin Goblet all bear inscriptions naming the glass-manufactory.[6] Also, other pieces, notably the Repold Goblet, the J. Amelung Goblet, and the Tobias and the Angel Covered Tumbler bear the Amelung name.[7]

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1. Alfred Coxe Prime, *The Arts and Crafts in Philadelphia, Maryland and South Carolina*, 1721-1785, The Walpole Society, 1929, p. 134. Amelung advertisement, *Maryland Journal and Baltimore Advertiser*, February 11, 1785.

2. Helen and George S. McKearin, *Two Hundred Years of American Blown Glass*, New York, 1950, p. 35.

3. *Maryland Journal and Baltimore Advertiser*, March 25, 1785, advertisement of Andrew Keener (son-in-law of John Frederick Amelung: McKearin, *op. cit.*, p. 40); *ibid.*, March 17, 1789-June 11, 1790, advertisement of James Labes (partner of John Frederick Amelung: McKearin, *loc. cit.*).

4. *Maryland Journal and Baltimore Advertiser*, May 16, 1789, quoted in: Dorothy Mackay Quynn, "Johann Friedrich Amelung at New Bremen," *Maryland Historical Magazine*, XLIII, No. 3, September 1948, p. 166.

5. Quynn, *loc. cit.*

6. These pieces are fully described in McKearin, *op. cit.*, p. 39. *Bremen Pokal*, dated 1788, inscribed "New Bremen Glassmanufactory." *Ghequiere Tumbler*, dated 1788, inscribed "New Bremen Glassmanufactory." *Boston Tumbler*, dated 1789, inscribed "Glassmanufactory of New Bremen in Maryland." *Mifflin Goblet*, 1791, inscribed "New Bremen Glassmanufactory."

7. McKearin, *op. cit.*, Pl. 66, 76. *Repold Goblet*, dated 1792, *Tobias and the Angel Tumbler*, dated 1788.

FIG. 1. *Sugar bowl. H. 8¾" (21.3 cm).*
The Henry Francis duPont Winterthur Museum.

From fragments – some colored – excavated at the New Bremen site and from family history, it seems certain that at least one small two-piece mold for pattern-molded wares was in use.[8] Histories and a comparison of techniques and forms have also established the fact that handsome free-blown pieces with applied and tooled decoration were made.

To this last category belongs a clear covered sugar bowl with swan finial and tooled handles; it was acquired by the Henry Francis du Pont Winterthur Museum a few years ago and is an important addition to its group of glass attributed to Amelung (Fig. 1). The bowl, purchased in Ohio, is believed to have been made in Maryland for a member of the Stevens family as a wedding gift. It was taken by descendants first to New York and then to Michigan. In 1909 it was given to a friend by the great-granddaughter of the original owner.

Although there is no positive record of the bowl having been made at New Bremen, several stylistic features make such an attribution reasonable. The rather squat form and high-domed cover are similar to those of the amethyst bowl at Winterthur made for Catherine Geeting, who lived near the New Bremen factory, and inscribed: *"To Mis. C.G. In Washington Cty."* (Fig. 2). The knob finial, to which the tooled leaves and swan are applied, is similar to that on the covers of the Tobias and the Angel and the Ghequiere (Fig. 3) Tumblers and the Bremen and Schley Pokals (Figs. 4, 5). The cover rests on a flange or molding applied to the outside of the bowl, a treatment found on the Geeting Bowl and on two others with

8. *Amelung Glass. An Exhibition* . . . Maryland Historical Society, Baltimore, Maryland, 1952, No. 28 and 29.

FIG. 2. *Sugar bowl, amethyst glass, made for C. Geeting. H. 8¼" (21.0 cm). The Henry Francis du Pont Winterthur Museum.*

FIG. 3. *Covered tumbler, made for Ch. Ghequiere. The Henry Francis duPont Winterthur Museum.*

FIG. 4. *The Bremen Pokal, inscribed: "Old Bremen Success and the New Progress" and "New Bremen Glassmanufactory—1788—North America, State of Maryland." H. 11¼" (28.5 cm). The Metropolitan Museum of Art.*

FIG. 5. *Pokal, given to G. J. Schley. H. 11⅞". (30.1 cm). The George S. McKearin Collection of American Glass. (Photo Taylor & Dull.)*

tooled decoration attributed to Amelung which are also at Winterthur.[9] The plain foot, the handles, and the swan surrounded by leaves are so closely related to the Geeting Bowl that one is tempted to say that the two pieces were blown by the same workman. The piece is made of non-lead glass, turning a greenish-yellow under ultraviolet light.

Judged by its fine metal, this bowl was probably blown after 1788, the date of at least three of the presentation pieces and a set of case bottles.[10] Possibly it dates from 1790, when Amelung advertised[11] that he hoped shortly to make glass "equal in quality to any imported from

9. McKearin, *op. cit.*, Pl. 28, 29.

10. McKearin, *op. cit.*, p. 39.

11. In a petition by Amelung to the Congress, New York, May 26, 1790, quoted in: Quynn, *op. cit.*, p. 168. I am grateful to Helen McKearin for additional material regarding this paper.

any part of the world."

The quality of the bowl is so outstanding that an analysis of its form and tooled decoration will, it is hoped, lead to a new evaluation of those free-blown pieces from Amelung's glassworks which rely for ornamentation primarily on tooling rather than on engraving.

The silhouette can be described as an oval accented by the handle tips and the ruffled plumage of the bird. Within this form lies the somewhat flattened pear shape of the bowl itself with the cover and body in good proportion to one another. The leaves on top curve down to relate the finial ornament to the bowl in a more satisfactory manner than on the Geeting Bowl. The handles, following rococo silver designs of curve and reverse curve, add variety to the otherwise contained form. The airy bird poised ready for flight, although crudely executed, further lightens the form.

While the bowl, because of its two handles and bird placed in profile, is particularly pleasing from one point of view, the three-dimensional form is maintained by the use of four leaves rather than two.

In glass the study of light and shade, so important in the visual effect of paintings, may be changed to an analysis of reflections. Here again this piece is noteworthy for its nice relationship between the broad, continuous bands of highlights running up through the body and cover, divided only by the necessary cover ring, and the broken, sparkling reflections on the spiny handles and finial. The base forms a firm support for the bowl by the thickening of the glass and consequent deepening of tone.

The pale-green cast of this glass, probably closest to that of the Bremen Pokal, is one of several tints and shades occurring in documented objects from this factory. While the color is attractive to our eye, it was apparently not intentional as Amelung strove for clarity and whiteness of metal. Remarkable is the suitability of the material to the design; had the bowl been executed in silver, the finial would probably have seemed too large. The robust, functional form lightened and decorated by tooling still retains the feeling of molten metal.

The glass blower has achieved a highly personal expression as well as one characteristic of German craftsmanship which so often relied upon applied and tooled ornament. Here also may be enjoyed the same immediacy and charm of the offhand blown pieces made in the South Jersey tradition which have been called American folk art in glass.

FIG. 1. *H. 3¾" (9.5 cm).*
The Estate of Mabel I. Renner.
Obverse.

18th CENTURY ENAMELED BEAKERS WITH ENGLISH INSCRIPTIONS

JAMES H. ROSE

THE painted glass known as peasant enamel is notoriously difficult to classify. Its shapes, more often than not, are simple and offer no clues as to origin. Identification, when attempted, is usually based on some supposedly national characteristic of the decoration but peasant enameling was known all over western Europe from the Scandinavian countries down through Spain. (It was not made in, or apparently even imported into, England.) Unluckily throughout the area of its manufacture, peasant decorative idiom varied little.

In America we have a perplexing group of such glasses. Ten are now recorded with much in common. They are almost certainly from one shop but are not necessarily from the same hand. All are in a quite thin, colorless or nearly colorless metal. This has not been analyzed but is probably a soda lime. While they vary in size, all are of the sloping-sided shape. *All are inscribed in English.* All are decorated in the same colors of opaque enamels, white, brick-red, gray-blue, yellow, a peculiar nile green and black. (See appendix.) The colors are used raw with no attempt at shading or blending. This is Hunter's palette[1] and was considered by him to be *prima facie* evidence of Stiegel origin. Eight of the ten glasses have a secondary decoration of a sentimental nature, hearts or love birds or both. On nine the inscription is separated from the reverse pattern by stiff floral or leaf forms. Due perhaps to the necessity of leaving plenty of space for an inscription, the decoration is less crowded than is normal on peasant glass. In the six cases where any history is known, the glass is either currently in, or came from, Pennsylvania.

Of the ten, five are inscribed "We two will be true" and have love birds or hearts on their opposite sides [Winterthur; Renner Estate; two in Corning; formerly McKearin Coll.].[2] Three are inscribed "My love you like me do" and again, as might be expected, the designs on the backs are sentimental [Pennsylvania State Mus.; two in Corning]. The ninth is a Masonic glass and has the motto "Friendship/ Amity" on one side and, on the other, a medallion enclosing clasped hands below a radiant,

1. Frederick William Hunter, *Stiegel Glass*, New York, 1950 (revised ed.) p. 203.

2. Only four of the "We two" glasses are shown here. The fifth was in the sale of a part of Mr. George S. McKearin's collection in New York, April 1931, #217 in the catalogue, shown facing p. 50. Its secondary decoration was described as "two red hearts between flowers." This glass cannot be located; it is to be hoped that its disappearance is temporary.

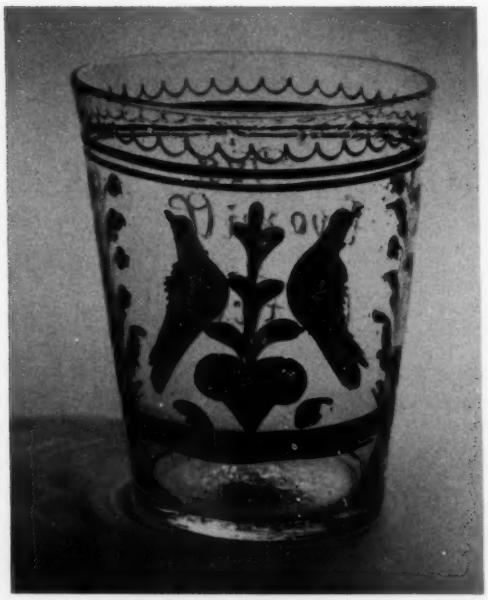

FIG. 2. *Renner beaker. Reverse.*

FIG. 3. *H. 3¾" (9.5 cm). The Henry Francis du-Pont Winterthur Museum. Obverse.*

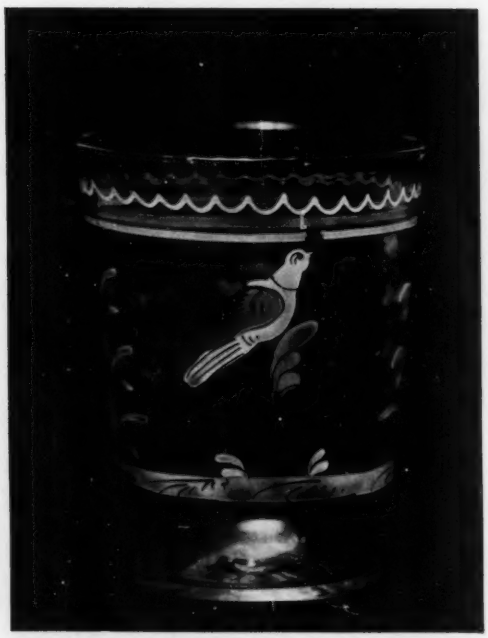

FIG. 4. *Winterthur beaker. Reverse.*

"all-seeing eye" [Corning]. The tenth is the smallest of the lot and is a patriotic glass [J. Strauss Coll.]. It has "Liberty" between two leaf sprays tied below by a bow-knotted ribbon. On its reverse is a spray of flowers. The sentimental eight were probably stock glasses, made for general sale; the last two may have been special order work.

The glasses are inscribed in English with German characteristics, notably the umlauting of terminal "y's" and an uncertain and random use of capital letters. The latter, of course, is not necessarily Teutonic but, coupled with the dotted "y" it seems to have some significance. Finally, the meaning of "My love you like me do" is not clear. Is it a statement or an entreaty? It is unquestionably not idiomatic English. Since at least three such glasses were made and sold, there was no uncertainty as to meaning on the part of either buyer or seller. These peculiarities suggest that the native language of both maker and buyer was not English and that it

may have been German. This, in turn, points to an original market among the Swiss and Palatinate Germans of southeastern Pennsylvania, an assumption partially confirmed by the distribution of the glasses. Hearts, love birds and stylized flowers are frequently seen on the furniture, fraktur work and pottery of these so-called "Pennsylvania Dutch" and the extension of such decoration to their glass is a natural development. Furthermore, by the time these glasses were made, probably in the last third of the 18th century, many of these "Dutch" would have been speaking English after a fashion and they would have written it with the same Germanic overtones found on the glasses.

The dotted "y" was used in Pennsylvania at least as early as 1765, in Germany much earlier, and the use persisted well into the 19th century.[3] Obviously this mannerism is of no help in dating the glasses, nor is the superficial resemblance to an *engraved* "Liberty" tumbler[4] in the Strauss collection of any more aid. This other "Liberty" glass, its "y" innocent of umlaut, is an Amelung piece and, if a connection could be established between it and the similarly inscribed painted glass, dating would be simplified since Amelung's New Bremen Glass manufactory operated between 1785 and 1795. It is unfortunate for this inquiry that the use of the word "Liberty" as a slogan cannot be restricted to any particular time. It appeared as early as 1765-1767 when "Liberty and Property, and no Stamps" was the motto of various colonial newspapers. Its use continued through the pre-war and war years and, in the Federal period, it was employed on our coins where it has endured until modern times. A more undate-

FIG. 5. *H. 3⅝" (9.2 cm). Harrisburg, Pennsylvania State Museum. Obverse. (Photo: courtesy of the Pennsylvania Historical and Museum Commission.)*

FIG. 6. *Pennsylvania Museum beaker. Reverse.*

3. Miss Frances Lichten with her usual scholarly generosity has sent me a long list of instances of the Pennsylvania use of the dotted "y" ranging from 1765 to 1861.

4. Jerome Strauss, *Glass Drinking Vessels from the Collections of Jerome Strauss and the Ruth Bryan Strauss Memorial Foundation*, spec. exhib., The Corning Museum of Glass, Corning, N. Y., 1955, p. 115 (Cat. No. 291), illus. p. 116.

FIG. 7. *The Corning Museum of Glass. (Nos. 50.4.27; 57.4.15 A, B; 55.4.67). Obverse.*

able word would be hard to find.

The origin of the glasses is as obscure as their date. If they were made in Europe before the American Revolution, a remarkably complicated transaction must have occurred. During colonial times our imports were under strict British control. Helen McKearin[5] has made an extensive search of the newspapers of the period and cites only one instance, a sale of Dutch glasses in Boston in 1769, of any mention of glass other than English. To be legally admitted to the colonies, goods had to be from England but they did not have to be English. A British merchant or exporter could have ordered glasses from some continental source, for example Germany, had them shipped to his English warehouse and then reshipped them to America. This implies, on the part of the hypothetical British exporter, a nearly incredible knowledge of the very special taste of a small

FIG. 8. *H. 4⅜" - 4⅝" (11.1 - 11.7 cm). Corning beaker. (No. 50.4.27). Reverse.*

5. Helen McKearin, "18th Century Advertisements of Glass Imports into the Colonies and the United States," *Glass Notes*, No. 14, London, 1954, p. 14.

FIG. 9. *H. 4" and 4⅛" (10.2 and 10.5 cm). Corning beakers. (No. 57.4.15, A, B). Reverse.*

segment of the American market. It is not impossible that the peculiar demands of the Pennsylvania Dutch were relayed to England by an agent resident in, say, Philadelphia. So involved a chain of events is unlikely. The only other pre-Revolutionary source of imported goods was through smuggling and this can be ruled out: the glasses were too inexpensive and their market too limited to tempt anyone to an illicit trade in them.

During the war years, as Miss McKearin[6] points out, very little glass was imported, so a transatlantic source can probably be disregarded from 1775 to 1783. There was a considerable postwar trade in "French, German and Dutch" glassware[7] and the glasses could have arrived then. One of the prewar complications, the British merchant, was no longer a legal requirement and importation had been simplified to that extent. But, as earlier, no con-

FIG. 10. *H. 3⅜" (9.5 cm). Corning beaker. (No. 55.4.67). Reverse.*

6. Helen McKearin, *op. cit.*, p. 13.
7. Helen McKearin, *ibid.*

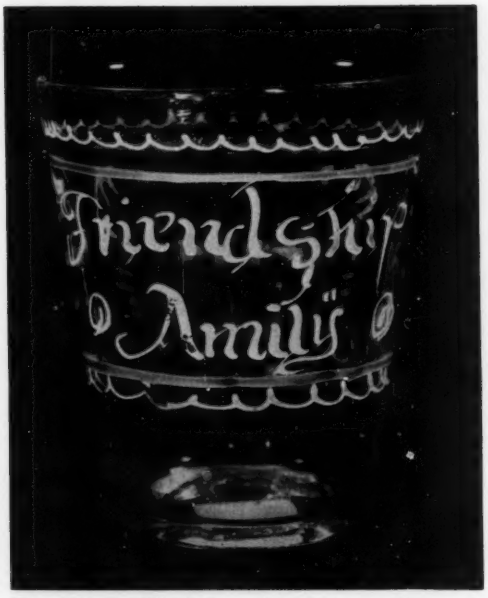

FIG. 11. *H. 3⅜" (8.6 cm). Corning beaker (No. 58.4.31). Obverse. For reverse view see* List of Recent Acquisitions, *p. 114.*

tinental maker could have had the special knowledge implicit in the inscriptions on the glasses. He would have had to be prompted from this side of the water.

On the other hand, if an American origin is assumed, the relation between manufacturer and market is much less complex. The essential knowledge is inherent in the situation and the cumbersome chain of events between maker and user disappears. The problem is narrowed to a consideration of specific source. It has been established that Henry William Stiegel, operating glasshouses in Lancaster County, Pennsylvania from 1763 to 1774, advertised enameled glass. Hunter illustrates[8] one of these advertisements and cites five instances, February to March 1773, of its appearance. The McKearins[9] quote an even earlier one, July 6, 1772. There can be no question but that Stiegel, working in the very heart of the Pennsylvania Dutch country, made and sold enameled glass at least as early as 1772. Moreover, it is reasonable to conclude that any enameling done by him would be of the same type as that on the inscribed pieces. Stiegel was a German. He came here from Cologne in 1750 and started his first glass factory in 1763. Many, perhaps all, of his workmen's names are known and most of them seem to have been German.[10] Even more significant, his closest market was to a very considerable extent composed of Swiss and Palatinate Germans. They were his immediate neighbors in southeastern Pennsylvania and would have found peasant enamel much to their taste. It was what they would have used had they stayed in Europe; it is undoubtedly what they used here. Stiegel as a maker and the Pennsylvania Dutch as a market fulfil all the conditions for glasses more than a little Germanic in ornament and inscription.

Despite these facts so favorable to a Stiegel attribution, and even though he is the only 18th century American glassmaker known to have advertised enameled glass, it would be hazardous not to examine the other possibilities.

In the Kensington district of Philadelphia about seventy-five miles east of Stiegel's Lancaster County site, he had a competitor, the Philadelphia Glass Works.[11] Little is known about this factory beyond its dates. It opened in 1773 and failed in 1777. Under new ownership it reopened in 1780 and operated, apparently intermittently, until 1800 when a new set of proprietors took over. Felix Farrell may have been an interim tenant during the 1777-1780 hiatus. He, along with the delightfully named George Bakeoven, advertised the making of glass in Kensington in 1777. Farrell[12] was

8. Hunter, *op. cit.*, facing p. 67.

9. George S. and Helen McKearin, *American Glass*, New York, 1941, p. 85.

10. Hunter, *op. cit.*, appendix, pp. (235), 236, 237, 238 and 239; the enamelers, p. 238. His naming of the enamelers is admittedly facetious and should be disregarded.

11. George S. and Helen McKearin, *op. cit.*, p. 93 ff.

12. George S. and Helen McKearin, *op. cit.*, p. 95 f.

a glass blower, had worked for Stiegel under contract and had run away from him in 1771. Very little is known concerning the output of any of these Philadelphia houses during the crucial period and there is no indication whatever that they did any enameling. They are important because of their proximity to the Pennsylvania Dutch market and because they would have been the most likely havens for Stiegel's migrating enamelers who surely would have sought an employment for their skill after, and perhaps before, his failure.

A third possible American source is the Amelung works in northern Maryland. John Frederick Amelung came to this country from Bremen in 1784 bringing with him sixty-eight presumably experienced hands.[13] His factory was in operation until 1795 and, although none of his known advertisements mentions enameling, it is established that he made at least three tumblers where monochrome enamel was used on the interior of the glass to back up and enhance gilding on its exterior.[14] Moreover, he indubitably *engraved* a "Liberty" glass. He was a German and so were his workmen. His factory's site was not far from the Pennsylvania Dutch settlements. Like Stiegel, he fulfils the conditions, but there are many objections to an Amelung attribution. His authenticated work is uniformly heavy; the peasant enamel glasses are all thin. His known tumblers have a slight but unmistakable deviation in the slope of their sides. Just above the base, the taper veers toward the vertical giving an effect of a minute bulge. This seems to be due to the unusual thickness of Amelung bases, a thickness that would have resisted both inflation and manipulation. The peasant enamel glasses lack this

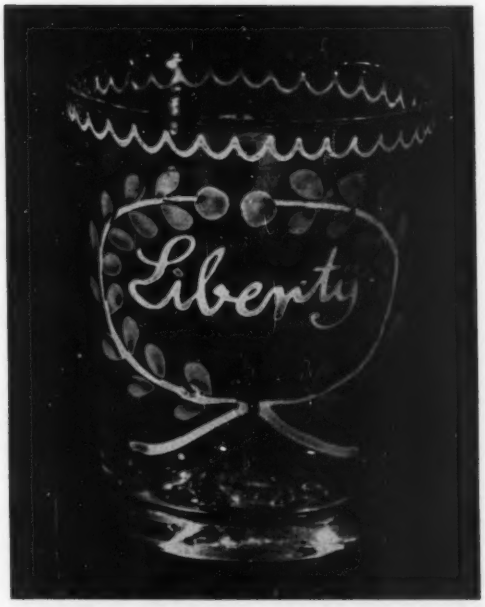

FIG. 12. *H. 2¾" (7.0 cm). Coll. Jerome Strauss. (No. S 1681). Obverse.*

FIG. 13. *Strauss beaker. Reverse.*

13. John Frederick Amelung, "Remarks on Manufactures, Principally on the New Established Glass-House, near Frederick-Town, in the State of Maryland." Quoted in George S. and Helen McKearin, *op. cit.*, p. 100 f.

14. Helen and George S. McKearin, *Two Hundred Years of American Blown Glass*, Garden City, N. Y., 1950, p. 282, illus. Pl. 81-2.

"bulge" and have thin bases. If Amelung made them, his blowers would have had to change their habits. Furthermore, his recognizable pieces, while somewhat below the ultimate in sophistication, are much superior to the peasant style, but these authenticated glasses are principally presentation work and his commercial output, of which nothing is known, may have been thin. He remains a conceivable source.

There is much to be discovered before a firm, or even tentative, attribution can be made or the dates set. With ten examples now recorded, others, preferably with more revealing inscriptions, may turn up. A dated one would help. Meanwhile a thorough search for the same palette should be made of public and private European collections of similar material. If this produces no glasses in the identical colors, an American origin is indicated. On the other hand, if European glasses are found in the palette, nothing definite is proved. An international palette may have existed and emigrating enamelers may have brought it with them.

In America today we suffer from a pronounced caution, particularly where an attribution to Stiegel seems to be indicated. Years ago, under the influence of Hunter, we had no doubts. Today with the pendulum swung the other way, the very name Stiegel is taboo, and there can be no doubt that our timidity has led us into a new set of errors. This is not to say that the glasses in question are necessarily Stiegel. On the evidence available today, all that can be said is that they are far more likely to be American than European. No conclusion as to a specific source is possible. As has been said recently in another connection, "The situation is desperate but not serious."

APPENDIX

The following are the code numbers of the colors of the beakers in The Corning Museum of Glass, according to the *Color Harmony Manual*, published by the Container Corporation of America, 1958:

Beaker Acc. No.		*Hue*	*Value*
50.4.27	green	24½	gc
	red	6	lc
	yellow	2	ia
(general color)	blue	13½	gc
(darkest value)	blue	13½	ic
57.4.15 A	green	24½	ec
	red	6	nc
	yellow	2	ia
	blue	13½	lc
57.4.15 B	green	24½	ec
	red	6	nc
	yellow	2	ia
	blue	13½	lc
55.4.67	green	24½	ec
	red	6	nc
	yellow	1½	ga
(general color)	blue	13½	gc
(darkest value)	blue	13½	ic
58.4.31	green	24½	lc
	red	6½	ne
	yellow	2	ia
	orange	4	ga
(general color)	blue	14	ga

Code numbers for beaker in the Jerome Strauss Coll.

S.S. 1681	green	24½	ec
	red	6	lc
	yellow	2	ga
(general color)	blue	14	gc
(darkest value)	blue	14	lc

The hues, which have been compared with opaque color "chips" in the source mentioned above, are fairly consistent; however, there are slight differences in the values. This may be due to the variation of density with which the enamel was applied to the transparent glass and the light transmitted through the colors.

A PAIR OF 19th CENTURY AMERICAN TANKARDS WITH JAPANESE COINS

JEROME STRAUSS

COMMEMORATIVE glasses appear to have always had an attraction for the English people so that it was natural for the English glassmaker to take advantage of this interest and produce such pieces with frequency and in wide variety. Not only during the seventeenth and the eighteenth centuries was this true for the practice continued throughout the nineteenth and has persisted to the present day. Witness the great number of glasses for the coronations of Edward VIII, George VI, and Elizabeth II.

Closely allied to this practice was the habit of enclosing coins and medals in the bulbs of stemware or the hollow bases of tumblers and tankards. Use of a medal obviously implies a very personal and specific record. Coins may similarly have personal significance, though more likely an important date or an anniversary, such as a twenty-fifth or a hundredth, is remembered. Examples are the glasses of 1685-90 carrying coins of the early 1660's (very possibly pointing to twenty-fifth anniversaries of events early in the reign of Charles II) and the rather frequent wine glasses of circa 1710 carrying coins of the reign of Queen Anne (1702-14).

Practices abroad, more especially in England, quite naturally spread to America. The author's chalice containing the *prix de diligence* of Albert Gallatin from the University of Geneva preserved in a green bottle glass unquestionably produced in Gallatin's factory,[1] and the Sandwich glass bank in the Corby collection with a silver half-dime of 1837 in the bulb beneath its receptacle are very good examples. Very occasionally a coin of importance in one country appears in a glass of another, such as the pinetree shilling stamped in Massachusetts in the 3rd quarter of the 17th century and found in an English wineglass sold at a New York auction about twenty years ago.

About two years ago there appeared on the market a pair of mugs or tankards of substantial capacity with bulbed stems enclosing, at least in one of them, some oriental coins. Oriental keepsakes, brought home by seafarers or travelers are common enough; the unusual is their preservation in glass. This may have hap-

1. *Glass Drinking Vessels from the Collections of Jerome Strauss* . . . , exhib. cat., The Corning Museum of Glass, 1955, No. 293, ill.

FIG. 1. *Tankards. Left: owned jointly by J. H. Rose and R. H. Wood. Right: Strauss Coll. H. 7⅝" (19.4 cm).*

pened many times but the author has come upon no other published example.

The tankards are 7⅝" high (19.4 cm.) and are shown in Fig. 1. One of them contains a metal disc that has been broken in several pieces but abrasion has so clouded the interior of the bulb (as is shown on Fig. 2) that it is impossible to photograph or even decipher the nature of the object. This piece is now owned jointly by James H. Rose and Richard H. Wood. The other tankard houses four small coins of Japanese origin upon which more details follow. This piece is now in the author's collection.

Since the two glasses are practically identical, the broken disc or medal or coin has most likely some Japanese association, causing the original owner to have wished to keep them with the coins. They could, of course, just be souvenirs from a single voyage and the broken pieces not at all Japanese, but the former conjecture seems more likely.

Turning to the problem of dating, quick preliminary appraisal pointed to "circa 1840." However, although the general form and production technique were current at that time, the actual form was too rigid and too lacking in graceful curvature. It was not the work of an apprentice or a craftsman in his early years but rather of a master hand and hence was of a period and pointed to a date when the grace of the earlier years was no longer in evidence.

For the dating then, it was necessary to turn to the coins. It will be noted from Fig. 3 that the topmost coin carries the designation "5 Sen" in Arabic lettering; this designation is also found on one of the other three and these two must have been subsequent to the collapse of the Shogunate in 1868. All the remaining numbers and words are in Japanese characters. With the help of Mr. William Clark of the

FIG. 2. *Detail of the knop of the Rose-Wood tankard.*

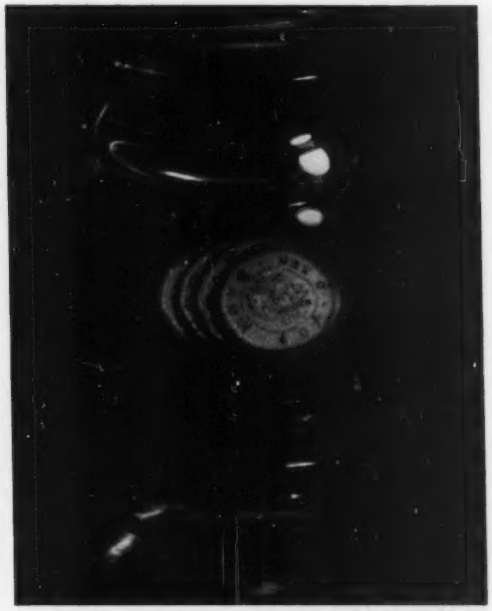

FIG. 3. *Detail of the knop of the Strauss tankard.*

American Numismatic Society, both sides of all four coins were read for period and date. They all carry the designations "Meiji" and "Dai Nippon" and two of them on the obverse "five sen," the latter also in Japanese. Coins of the Meiji (enlightened government) period bear dates beginning only with the third year and one of these is in this group. Of those with the denomination in Japanese, one is of the third and one of the fourth year (1870 and 1871) while the two with Arabic lettering are of the sixth and ninth years (1873 and 1876). Thus, these tankards with their faint resemblance to an earlier style are actually of 1876 or later, very possibly only slightly later.

There remains only the question of provenance. Here the investigator walks on thin ice. Based upon form and technique these glasses might be presumed to be either English or American. Finding them in America, in the possession of an American family, and their similarity, other than the bulb contents, to other glasses made in New England, encourages an American to attribute them to America. In this he follows a natural, though often enough unsound, practice of ascribing as much as possible to his own country. It is a pleasant habit, giving way only upon proof of error.

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Recent Important Acquisitions

MADE BY PUBLIC AND PRIVATE COLLECTIONS IN THE U. S. AND ABROAD*

10

1. Inlay of brown glass, portraying Amenophis IV. About 1360 B.C., Egypt, probably from Tell-el-Amarna. H. 2⅛" (5.2 cm). Ex-Coll. Friedrich Wilhelm Freiherr von Bissing. *Aegyptische Staatssammlung, Munich.*

2. Statuette of a hippopotamus in blue glass. About 6th century B.C., Egypt. H. 3" (7.7 cm). *Ray Winfield Smith, Arlington, Virginia.* (RWS No. 1533.)

3. Bottle of core glass. About 6th-3rd century B.C., Eastern Mediterranean. *Frederic Neuburg, Tel Aviv, Israel.* (No. XXXV.)

4. Amphoriskos of *millefiori* glass. About 1st century B.C. – 1st century A.D., possibly Alexandria. *The Corning Museum of Glass, Corning, New York.* (No. 58.1.38.)

5. Bowl with cut grooves. Late Hellenistic. H. 3⅜" (8.5 cm). D. 5¾" (14.6 cm). *The Metropolitan Museum of Art, New York City,* Rogers Fund, 1957. (No. 57.11.6.)

6. Bowl, "pillar moulded." About 1st century A.D., Roman Empire. D. 4⅞" (12.2 cm). *Antikensammlungen (Glyptotek und Museum Antiker Kleinkunst), Munich.* (No. 12.239.)

7. Beaker, mold-blown, with four gladiators crowned by winged goddesses. 1st century A.D., possibly North Italy. *The Corning Museum of Glass, Corning, New York.* (No. 58.1.32.)

8. Goblet of purplish glass, snake thread decoration. 2nd - 3rd century A.D., Near East, probably Syria. H. 5⅛" (13.0 cm). *Ernest Kofler, Luzern.* (No. 2831 E.)

9. Bowl with an engraved hunting scene, found at Winthill, Somerset. 4th century A.D., Rhineland. D. 7⅝" (19.2 cm). *Ashmolean Museum, Oxford.*

10. Group of bottles, bowls, and beakers from the cemetery Aeschenvorstadt-Elisabethenstrasse, Basle. 4th century A.D., Western Europe. *Historisches Museum, Basle.*

*In the majority of cases attributions have been provided by the owners.

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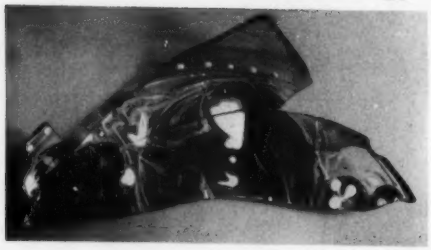

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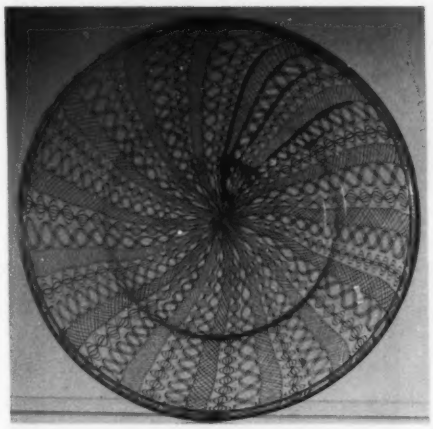

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11. Ewer or handled bottle, mold-blown, with Christian symbols. About 4th-5th century A.D., Near East. *Roger R. Pereire, Madrid.*

12. Bottle of clear glass, cut. About 1200, probably Persia (found in the Gurgan). H. 4½″ (11.4 cm). *Seattle Art Museum, Seattle, Washington.* Eugene Fuller Memorial Coll.

13. Bottle, mold blown. About 8th-9th century, probably Persia. H. 9⅛″ (23.0 cm). *Kunstmuseum der Stadt Düsseldorf.* (No. 1957-8.) (Photo: Landesbildstelle Rheinland.)

14. Fragment of a bowl, enameled and probably gilded, including the upper body and head of a figure. About 1260, possibly Europe ("Syro-Frankish"). Esti. D. of bowl 4⅞″ (12.2 cm). *Guildhall Museum, London.* (No. 20757.)

15. Beaker, enameled and gilded. Early 14th century, Syria. H. 8⅛″ (20.5 cm). Ex-Coll. Henry G. Leberthan. *The Metropolitan Museum of Art, New York City.* Gift of Mr. and Mrs. A. Wallace Chauncey. (No. 57.61.14.)

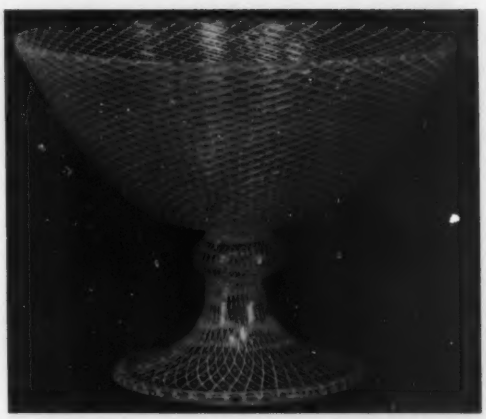
16. Mosque lamp, enameled and gilded, made for the Madrasa of Sultan al-Nasir Ḥasan b. Muhammad in Cairo. About 1360, Egypt or Syria. H. 13¼″ (33.6 cm). Ex-Coll. Baron G. de Rothschild and possibly Ex-Coll. Baron Lambert, Brussels. *Freer Gallery of Art, Washington, D. C.* (No. 57.19.)

17. *Guttrolf,* blue-green glass. Early 16th century, central Europe (found at Basle, Aeschenvorstadt). H. about 6″ (15.2 cm). *Historisches Museum, Basle.* (No. 1958.174.)

18. Bowl, mold-blown. About 1500, Spain. D. 10¾″ (27.3 cm). *Ashmolean Museum, Oxford.* A.G.B. Russell Bequest, 1958.

19. Dish of *latticinio* glass. 16th century, Venice. D. 13⅜″ (33.8 cm). *The Toledo Museum of Art, Toledo, Ohio.* (No. 58.21.)

20. Tazza of *vetro di trina* glass. 16th century, Italy. H. 4¼″ (10.8 cm). *Seattle Art Museum, Seattle, Washington.* Gift of Mrs. John C. Atwood, Jr.



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21. Goblet. About 1600, Germany. H. 17¾" (45.1 cm). *The Toledo Museum of Art, Toledo, Ohio.* (No. 58.23.)

22. Goblet. 17th century, Venice or *Façon-de-Venise.* H. 10¼" (26.0 cm). *Walter F. Smith, Jr., Trenton, New Jersey.*

23. Beaker of brownish glass. Early 17th century, Germany. H. 6½" (16.5 cm). *Helfried Krug, Gladbeck, Germany.*

24. Humpen, enameled, commemorating the Westphalian Treaty. Dated 1650, Germany, probably Franconia. H. 16½" (41.9 cm). Part of

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the Edwin J. Beinecke Gift. *The Corning Museum of Glass, Corning, New York.* (No. 57.3.54.)

25. Beaker, engraved with the coat-of-arms of "Andereas Morell." 17th century, Central Europe. H. 5¼" (13.3 cm). *Bernisches Historisches Museum, Bern.* (No. 36551.)

26. *Roemer* or *berkemeier,* engraved with the figures of the 7 planets, after an engraving by J. Matham. 17th century, The Netherlands. H. 6¾" (17.2 cm). *Museum Boymans, Rotterdam.*

27. Bottle of green glass, engraved. 17th century, The Netherlands. H. 9⅛" (23.0 cm). Ex-Coll. Heye. *Museum Boymans, Rotterdam.*

28. Flute, engraved with Tree and Lion of the House of Orange. About 1655-1675, The Netherlands, perhaps engraved by Claes Janszoon Meyer. H. 17⅜" (44.0 cm). *The Toledo Museum of Art, Toledo, Ohio.* (No. 58.22.)

29. *Flügel*-Glass, engraved with a coat-of-arms including the letters "RT." Probably 1666-1677, signed "Peter Wolff fecit"; The Netherlands. H. 10⅜" (26.5 cm). *A. J. Guépin, Eindhoven, The Netherlands*

30

30. Bottle of green glass, engraved with an aphorism. Signed and dated "Willem van Heemskerk A E 76½ Ao 1689 in Leyden"; The Netherlands. H. 7⅞" (20.0 cm). Ex-Coll. Mrs. C. M. Verschoor-Isebree Moeus. *Zeist Centraal Museum der gemeente Utrecht, Utrecht.*

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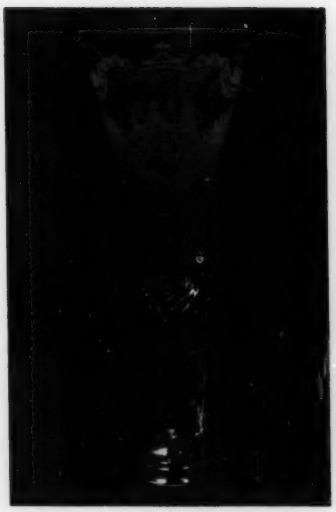

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31. *Pokal,* engraved with Zeus and Antiope. 1725-1750, Potsdam, possibly engraved by Elias Rosbach. H. 10¼" (25.5 cm). *Helfried Krug, Gladbeck, Germany.*

32. Beaker of ruby glass, engraved. About early 18th century, Germany, attributed to Johann Kunckel. *The Royal Ontario Museum, Toronto.* (No. 957.203.4.)

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33. *Pokal,* engraved for the Dutch market. About 1730-40, Germany, Silesia. H. 9¾″ (24.7 cm). *Bayrisches National Museum, Munich.* (No. 57.47.)

34. Goblet, engraved with figures around an altar. Signed and dated: "Jacob Sang inv. et fec. Amsterdam 1761"; The Netherlands. H. 7½″ (19.0 cm). *A. J. Guépin, Eindhoven, The Netherlands.*

35. Plaque of enameled *lattimo* glass. 18th century, Venice. *Museo Civico, Turin.*

36. Goblet, enameled with the coat-of-arms of Henry Herbert, 10th Earl of Pembroke and 7th Earl of Montgomery. Signed: "Beilby N. Castle invt & pinxt"; about 1760, England, Newcastle-on-Tyne. H. 8″ (20.3 cm). *Jerome Strauss, State College, Pennsylvania.*

37. Cruet-bottle of blue glass, gilded. About 1770, probably London, decorated in the workshop of James Giles. H. 7″ (17.8 cm). *Victoria & Albert Museum, London.* (No. C22 & A-1958.)

39

38. Chandelier, cut. About 1760, England. *Philadelphia Museum of Art, Philadelphia, Pennsylvania.* (No. 58-60-1.)

39. Goblet, enameled with a view of Giebichenstein Castle near Halle. Signed "G. Mohn in Wien"; 1811-1813, Vienna. H. 15½″ (39.4 cm). *Josef M. Mahler, Larchmont, New York.*

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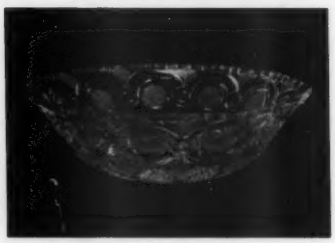

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40. Beaker, enameled with playing cards. Signed and dated twice: "Anton Kothgasser in Wien 1822"; Vienna. H. 4⅝" (11.9 cm). *Kunstmuseum der Stadt Düsseldorf.* (No. 1958-2.) (Photo: Landesbildstelle Rheinland.)

41. Beaker, engraved with Venus and Amor. Signed "Biman"; about 1830, Bohemia, Dominik Biman. H. 4¾" (12.0 cm). *P. C. Lehman-Bärenklau, Hamburg.* (Photo: Kleinhempel, Hamburg.)

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42. Beaker, enameled with a friendship motif and inscribed: "Friendship/Amity." 2nd half 18th century, United States, possibly glassworks of Henry William Stiegel. H. 3⅜" (8.6 cm). *The Corning Museum of Glass, Corning, New York.* (58.4.31.) For an obverse view see p. 100 of this *Journal.*

43. Flask, engraved with two duelling men and inscribed: "Joseph W. Hastings, Sandwich, Mass., Oct. 25, 1827"; probably 1827, Eastern United States. *Preston R. Bassett, Ridgefield, Connecticut.*

44. Baptismal font, blue glass. About 1830, United States, possibly Pittsburgh area. H. 6" (15.2 cm). *Melvin P. Billups, New York City.*

45. Bowl of amber glass with lily-pad decoration. About 1840, United States, Redwood, New York. D. 6½" (16.5 cm). *Crawford Wettlaufer, Buffalo, New York.*

46. Bowl with pressed Roman Rosette pattern. About 1840-45, United States, New England area. D. 10⅝" (27.0 cm). *Mrs. Louise Esterly, Reading, Pennsylvania.* (Photo: Patric P. Jacovidis.)

47. Pitcher with lily-pad decoration. About 1842-1855, United States, Stoddard, New Hampshire, probably blown by Matt Johnson. *The Henry Francis duPont Winterthur Museum, Winterthur, Delaware.* (58.4.7.)

48. Lamp with lacy-pressed base. About 1830, United States, probably Boston and Sandwich Glass Company. H. 12" (30.5 cm). *Mrs. H. G. Duckworth, Springfield, Massachusetts.*

49. Sugar bowl. About 1815-25, United States, probably Zanesville, Ohio (found near Zanesville). H. 6⅝" (15.5 cm). *The Henry Ford Museum, Dearborn, Michigan.*

CHECK LIST

of Recently Published Articles and Books on Glass

1956-1958

This first list makes no pretense of being complete. The format is determined by available material and will, therefore, vary with each issue. When only one reference in a category appears it is not listed separately but included in the general section.

The Editors would welcome suggestions as to content and organization as well as notices of new publications and reprints of articles. Future issues will contain book reviews, bibliographies on specialized subjects, and lists of sales catalogues.

Please address all communications to Book Editor, *Journal of Glass Studies*, The Corning Museum of Glass, Corning, New York.

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PUBLICATIONS SUMMARY: *Altetruskische Plastik*, Würzburg, 1936; *The Etruscans and their Art*, Providence, 1940; *The Season Sarcophagus in Dumbarton Oaks*, Cambridge, Harvard Univ. Press, 1951; *Observations on Roman Portraiture*, Brussels, 1953; *Ancient Art in American Private Collections*, Cambridge, 1954; *Etruskische Plastik*, Stuttgart, 1956; *Ancient Coins*, Cambridge, 1956; and articles on Near Eastern, Anatolian, Greek, Roman, and Etruscan art and archaeology.

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PUBLICATIONS SUMMARY: "The Training of Guides for Historic House Interpretation," *New York History*, Vol. XXXVII, No. 2, April, 1956.

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PUBLICATIONS SUMMARY: Articles in *Antiques* and *American Collector; American Glass Cup Plates* (with Ruth Webb Lee), Northboro, 1948; *The Story of American Pressed Glass of the Lacy Period, 1825-1850,* exhibition catalogue, Corning, 1954.

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PUBLICATIONS SUMMARY: "Ein Bildnis Parmigianinos und das manieristische Portrait," *Die Kunst und das schöne Heim,* 51, 1953, pp. 291-2; "An Islamic Carved Glass Cup in The Corning Museum," *Artibus Asiae,* Vol. XVIII, No. 3/4, 1955; "Mildner Glasses in America," *Antiques,* Vol. LXXI, No. 3, March, 1957.

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JEROME STRAUSS, born in New York City, in 1893. City College of New York, 1906-1909; Stevens Institute of Technology, 1913. Formerly Chief Research Engineer, 1928-1935, and Vice President, Vanadium Corporation of America.

PRESENT POSITION: Metallurgical Consultant.

PUBLICATIONS SUMMARY: "Another Gallatin Glass," *Antiques,* Vol. XXXVI, No. 2, August, 1939; "Chinoiserie on Glass," *Antiques,* Vol. LXI, No. 5, May, 1952; *Glass Drinking Vessels from the Collections of Jerome Strauss and the Ruth Bryan Strauss Memorial Foundation,* exhibition catalogue, Corning, 1955.

GLADYS DAVIDSON WEINBERG, born in New York City, in 1909. Ph.D., Johns Hopkins University, 1935. Formerly Fellow, American School of Classical Studies, 1932-3, 1935-8; Assistant Curator, Art Museum of Princeton University, 1939-43; Assistant Librarian, American School of Classical Studies at Athens, 1946-7; Acting Librarian, 1947-8.

PRESENT POSITION: Editor, *Archaeology* Magazine.

PUBLICATIONS SUMMARY: "The Avar Invasion of Corinth," *Hesperia* VI, 1937; "A Mediaeval Glass-Factory at Corinth," *A.J.A.,* 44, 1940; *Small Objects from the Pnyx: I* (with Dorothy Burr Thompson), Hesperia Supplement VII, 1943; *Corinth,* XII, *The Minor Objects,* Princeton, 1952.

KAZUO YAMASAKI, born in Kyoto, Japan, in 1911. Rigaku-hakushi (corresponding to Ph.D.) from Tokyo University, 1941. Formerly Assistant Professor, Nagoya University, 1941-1943.

PRESENT POSITION: Professor, Nagoya University, engaged in research in the field of co-ordination chemistry, ion-exchange in concentrated solution, trace elements distribution of rock forming minerals, and chemical studies on ancient pigments, ceramic glaze and glass.

PUBLICATIONS SUMMARY: Articles in Journal of Ceramic Assn. of Japan; Bijutou Kenkyo; Scientific Papers Japanese Antiques; Proceedings of the Japanese Academy.

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